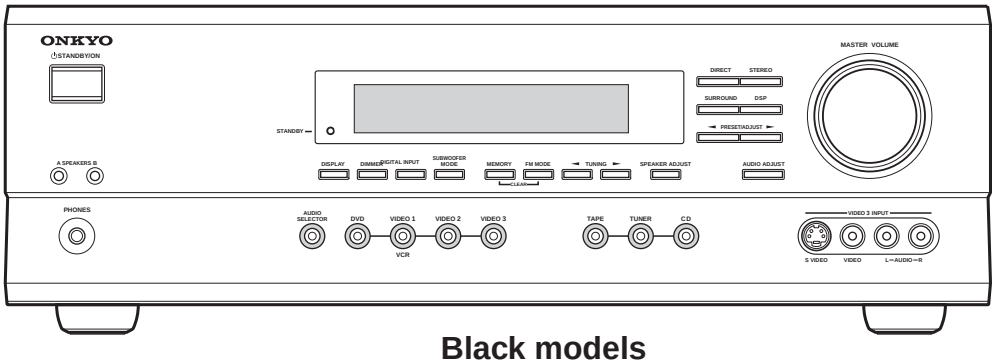
Ref. No. 3778
062003

ONKYO SERVICE MANUAL

AV RECEIVER
MODEL HT-R510



Black models

BMDD	120V AC, 60Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

ONKYO®
IMAGINATIVE SIGHT & SOUND

SERVICE PROCEDURES

1. Replacing the fuses

This symbol located near the fuses indicates that the fuse used is fast operating type. For continued protection against fire hazard, replace with same type fuse. For fuse rating refer to the marking adjacent to the symbol.

Ce symbole indique que le fusible utlise est a rapide. Pour une protection permanente, n'untiliser que fusibles de meme type. Ce darnier est la qu le present symbol est appse.

CIRCUIT NO.	PART NO	DESCRIPTION
F6901,F6902	252198 or	⚠ 8A-UL or
	252261	⚠ 8A-T/UL-ST2,Fuse
F901	252198 or	⚠ 8A-UL or
	252261	⚠ 8A-T/UL-ST2,Fuse

2. To initialize the unit

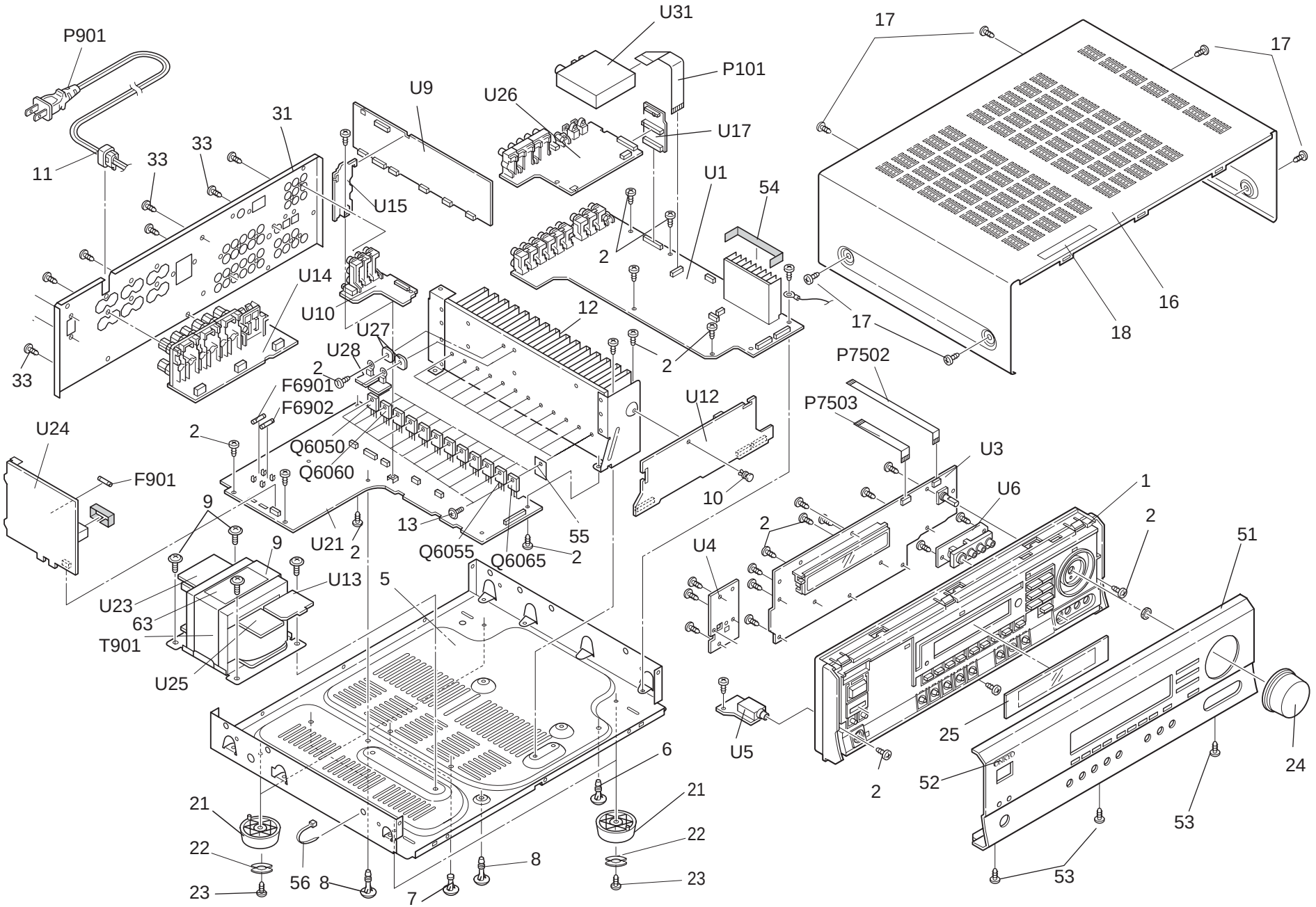
This device employs a microprocessor to perform various functions and operations. If interference generated by an external power supply, radio wave, or other electrical source results in accident which causes the specified operations and functions to operate abnormally.
To perform a result, please follow the procedure below.

1.Press and hold down the VIDEO-1 button, then press the STANDBY/ON button.
2.After "CLEAR" is displayed, the preset memory and each mode stored in the memory, such as surround, are initialized and will return to the factory setting.
3. Unplug the power supply cord.

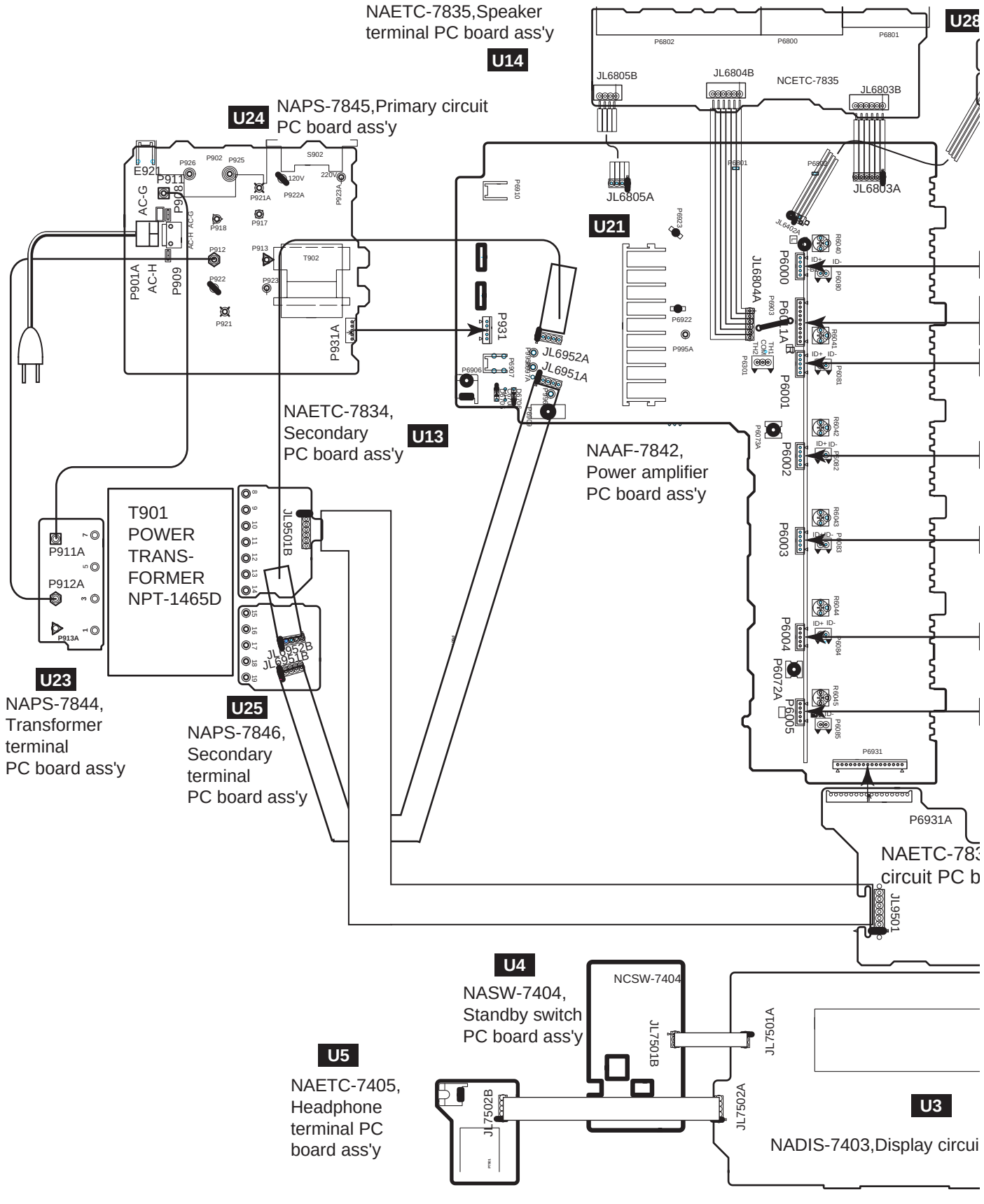
3. Safety-check out

(U.S.A. model only)
After correcting the original service problem, perform the following safety check before releasing the set to the customer.
Leakage Current Check
Measure leakage current to a known earth ground(water pipe, conduit, etc.) by connecting a leakage current tester between the earth ground and exposed metal parts of the appliance (input/output terminals, screwheads,metal overlays, etc.).
Plug the power supply cord directly into a 120V AC 60 Hz outlet and turn Standby switch on. Any current meausred must not exceed 0.5mA.

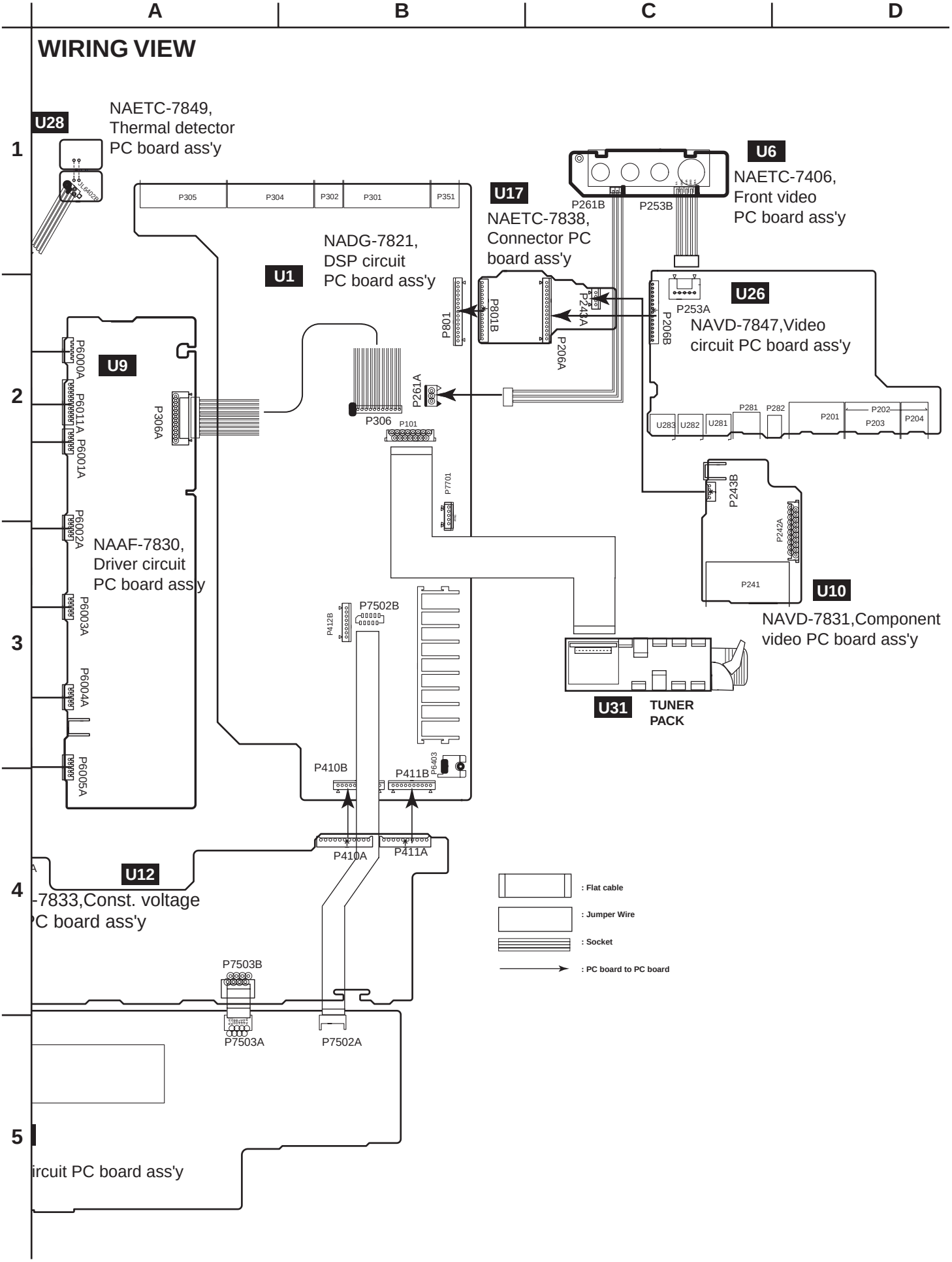
EXPLODED VIEW



WIRING VIEW

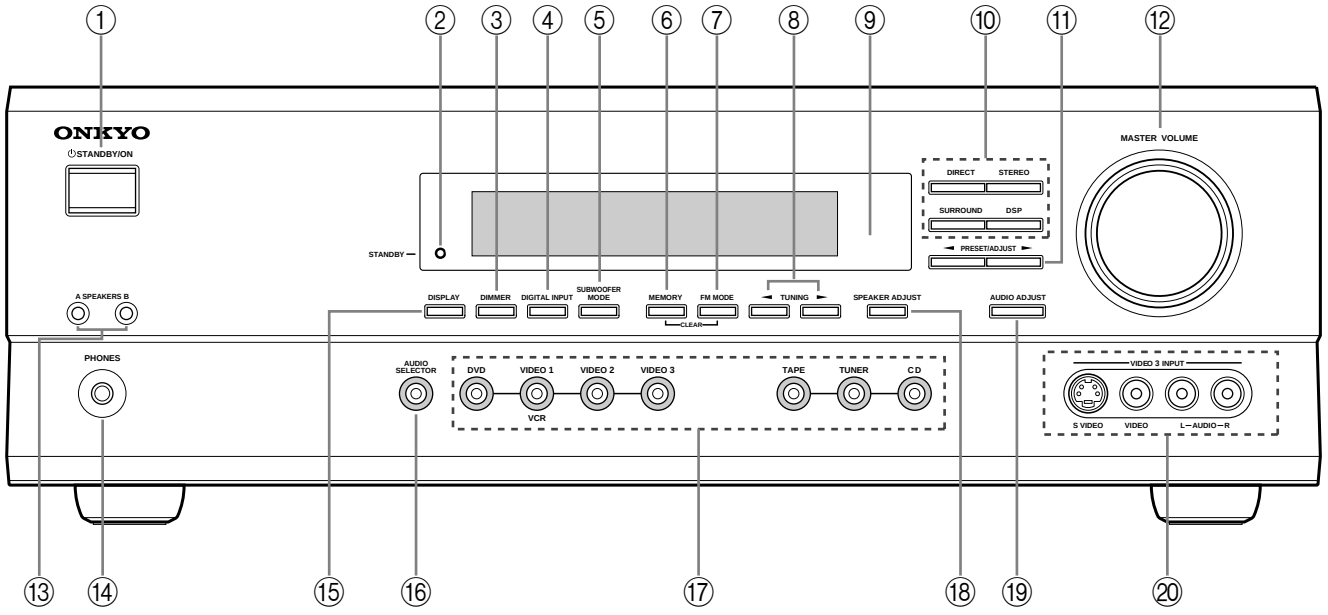

A
B
C
D
1
2
3
4
5
NAETC-7835,Speaker terminal PC board ass'y
U14
U24
NAPS-7845,Primary circuit PC board ass'y
U21
NAETC-7834, Secondary PC board ass'y
U13
NAAF-7842, Power amplifier PC board ass'y
T901 POWER TRANS-FORMER NPT-1465D
U23
NAPS-7844, Transformer terminal PC board ass'y
U25
NAPS-7846, Secondary terminal PC board ass'y
U4
NASW-7404, Standby switch PC board ass'y
U5
NAETC-7405, Headphone terminal PC board ass'y
U3
NADIS-7403,Display circui
NCETC-7835
NCSW-7404
JL6805B
JL6804B
JL6803B
JL6805A
JL6803A
JL6804A
JL6952A
JL6951A
JL9501B
JL6952B
JL6951B
JL9501
JL7501B
JL7502B
JL7502A
JL7501A
P6931A

WIRING VIEW


A
B
C
D
1
2
3
4
5
U28
NAETC-7849,
Thermal detector
PC board ass'y
U6
NAETC-7406,
Front video
PC board ass'y
U17
NAETC-7838,
Connector PC
board ass'y
U1
NADG-7821,
DSP circuit
PC board ass'y
U26
NAVD-7847,Video
circuit PC board ass'y
U9
NAAF-7830,
Driver circuit
PC board ass'y
U10
NAVD-7831,Component
video PC board ass'y
U31
TUNER
PACK
U12
-7833,Const. voltage
C board ass'y
ircuit PC board ass'y
P305
P304
P302
P301
P351
P261B
P253B
P801
P801B
P206A
P243A
P253A
P206B
P6000A
P6001A
P6002A
P6003A
P6004A
P6005A
P306A
P306
P101
P261A
P7701
P7502B
P412B
P410B
P411B
P6403
P410A
P411A
P7503B
P7503A
P7502A
P281
P282
P202
P203
P201
P204
U283
U282
U281
P243B
P242A
P241
: Flat cable
: Jumper Wire
: Socket
: PC board to PC board

Controls & Connectors

Front Panel



① STANDBY/ON button

This button is used to set the HT-R510 to On or Standby. For models with a POWER switch, this button has no effect unless the POWER switch is set to ON.

② STANDBY indicator

This indicator lights up when the HT-R510 is in Standby mode, and it flashes while a signal is being received from the remote controller.

③ DIMMER button

This button is used to adjust the display brightness.

④ DIGITAL INPUT button

This button is used to assign the digital inputs.

⑤ SUBWOOFER MODE button

This button is used to select the Subwoofer modes.

⑥ MEMORY button

This button is used when storing and deleting radio presets.

⑦ FM MODE button

This button is used to select the FM radio Stereo and Mono modes. It's also used when deleting radio presets.

⑧ TUNING [◄] [►] buttons

These buttons are used to tune into radio stations.

⑨ Remote control sensor

This sensor receives control signals from the remote controller.

⑩ Listening mode buttons

These buttons are used to select the listening modes.

⑪ PRESET/ADJUST [◄] [►] buttons

This button is used to select radio presets and adjust parameter values.

⑫ MASTER VOLUME control

This control is used to set the volume of the HT-R510.

⑬ SPEAKER A & B buttons

These buttons are used to turn speaker sets A and B on and off.

⑭ PHONES jack

This 1/4-inch phone jack is for connecting a standard pair of stereo headphones for private listening.

⑮ DISPLAY button

This button is used to display various information about the currently selected source.

⑯ AUDIO SELECTOR button

This button is used to select the input signal format.

⑰ Input selector buttons

These buttons are used to select the audio and video sources: CD, DVD, TAPE, TUNER, VIDEO 1, VIDEO 2, or VIDEO 3.

⑱ SPEAKER ADJUST button

This button is used to adjust various speaker-related parameters.

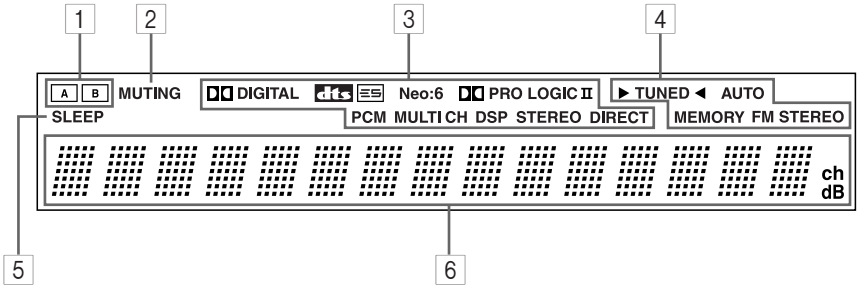
⑲ AUDIO ADJUST button

This button is used to set the Bass, Treble, Late Night, Cinema Filter, Center Image, Panorama, Dimension, and Center Width functions.

⑳ VIDEO 3 INPUT connectors

These S-Video, composite video (RCA/phono), and analog audio (RCA/phono) inputs can be used to connect a video camera or games console.

Display



1 A & B speaker indicators

Indicator A lights up when speaker set A is on. Indicator B lights up when speaker set B is on.

2 MUTING indicator

This indicator flashes when the HT-R510 is muted.

3 Source/listening mode indicators

These indicators display information about the currently selected source and listening mode.

4 Tuning indicators

TUNED: This indicator lights up when the HT-R510 is tuned into a radio station.

AUTO: This indicator lights up when the Auto Tuning function is on.

MEMORY: This indicator lights up when programming radio presets.

FM STEREO: This indicator lights up when the HT-R510 is tuned into a stereo FM station.

5 SLEEP indicator

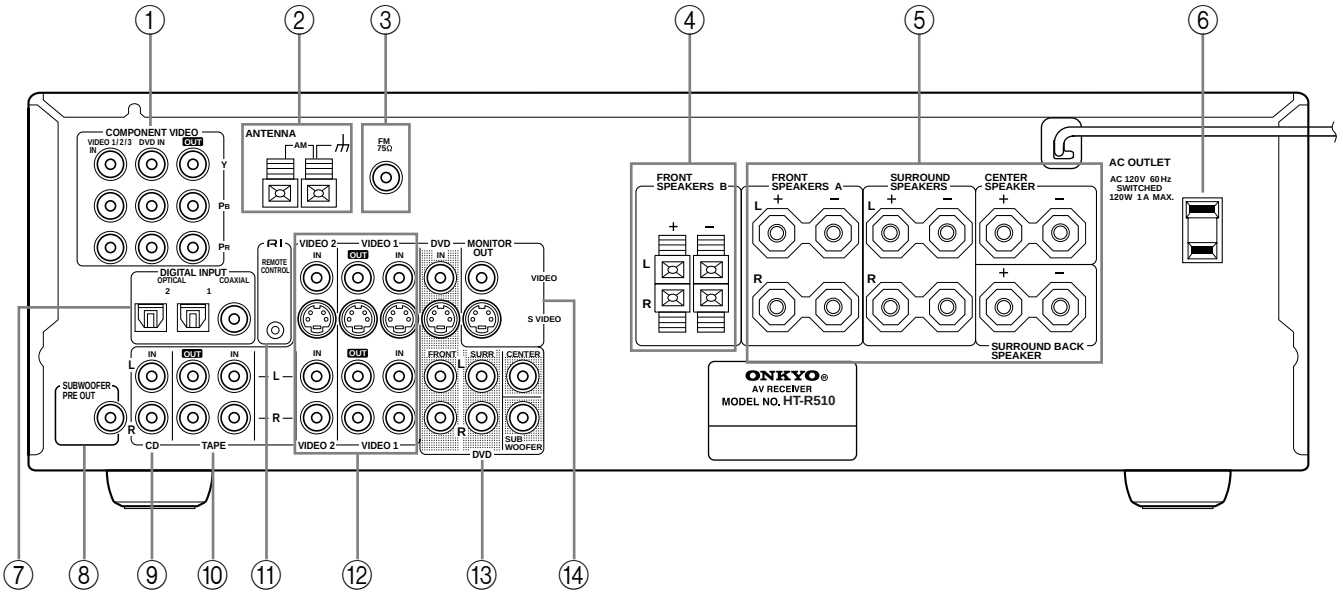
This indicator lights up when the Sleep function has been set.

6 Message area

This area of the display shows various information about the currently selected source.

Controls & Connectors—*Continued*

Rear Panel



① **COMPONENT VIDEO**

These RCA/phono connectors can be used to connect a TV, DVD player, or other AV component with component video inputs and outputs.

② **AM ANTENNA**

These push terminals are for connecting an AM antenna.

③ **FM ANTENNA**

This connector is for connecting an FM antenna.

④ **FRONT SPEAKERS B**

These push terminals are for connecting speaker set B.

⑤ **FRONT SPEAKERS A, SURROUND SPEAKERS, CENTER SPEAKER & SURROUND BACK SPEAKER**

These terminal posts are for connecting speaker set A, including the front, surround, center, and surround-back speakers. They accept bare wires or banana plugs.

⑥ **AC OUTLET**

This switched AC outlet can be used to supply power to another AV component.

⑦ **DIGITAL INPUT OPTICAL 1, 2 & COAXIAL**

These optical and coaxial connectors can be used to connect a CD, DVD, or LD (laser disc) player, or other AV component with digital outputs.

⑧ **SUBWOOFER PRE OUT**

This RCA/phono connector can be used to connect an active subwoofer.

⑨ **CD IN**

These RCA/phono connectors can be used to connect a CD player with analog outputs.

⑩ **TAPE IN/OUT**

These RCA/phono connectors can be used to connect a cassette recorder, MiniDisc recorder, or other recorder with analog inputs and outputs.

⑪ **RI**

This RI (Remote Interactive) connector can be connected to the RI connector on another Onkyo AV component, for example, a CD player, DVD player, or cassette recorder. The HT-R510's remote controller can then be used to control that component. To use RI, you must make an analog RCA/phono connection between your HT-R510 and the other AV component, even if they are connected digitally.

⑫ **VIDEO 1 IN/OUT & VIDEO 2 IN**

These connectors can be used to connect a VCR or other AV component. There are RCA/phono connectors for connecting to stereo analog audio inputs and outputs, and S-Video and composite video (RCA/phono) connectors for connecting to video inputs and outputs.

⑬ **DVD IN/MULTI CH INPUT**

The FRONT, SURR, CENTER, and SUBWOOFER RCA/phono connectors can be used to connect AV components with multiple analog audio outputs, including DVD players with individual 5.1 surround analog outputs. There's an S-Video input and composite video (RCA/phono) input for connecting the video signal.

⑭ **MONITOR OUT**

These S-Video and composite video (RCA/phono) outputs can be connected to the video input on your TV or projector.

Tip:
A turntable with a built-in preamp can be connected to a pair of unused HT-R510 analog inputs. To connect a turntable without a built-in preamp, you'll need a commercially available phono preamp.

Specifications

AMPLIFIER SECTION

Continuous Average Power output (FTC)

All channels:	**100 watts per channel min. RMS at 8 Ω, 2 channels driven from 20 Hz to 20 kHz with no more than 0.08% total harmonic distortion.**
Dynamic power output:	230 watts × 2 at 3 Ω 170 watts × 2 at 4 Ω 115 watts × 2 at 8 Ω
Total Harmonic Distortion:	0.08% at rated power 0.08% at 1 watt output
IM Distortion:	0.08% at rated power 0.08% at 1 watt output
Damping Factor:	60 at 8 Ω
Input Sensitivity and Impedance	
DIGITAL INPUT (OPTICAL 1, 2):	0.5 Vp-p, 75 Ω
DIGITAL INPUT (COAXIAL):	0.5 Vp-p, 75 Ω
LINE (CD, VIDEO 1, 2, 3, TAPE):	200 mV, 47 kΩ
Multichannel Input	
(DVD FRONT L/C/R, SURR L/R):	200 mV, 47 kΩ
(SUBWOOFER):	36 mV, 47 kΩ
Output Level and Impedance	
Rec out (TAPE, VIDEO 1):	200 mV, 470 Ω
Pre out (SUBWOOFER):	1 V, 470 Ω
Frequency Response:	10 Hz to 100 kHz, +1/–3 dB (Direct mode)
Tone Control	
Bass:	±12 dB at 20 Hz
Treble:	±12 dB at 20 kHz
Signal-to-Noise Ratio:	CD/TAPE: 100 dB (IHF-A, Direct mode)
Muting:	–50 dB

VIDEO SECTION

Input Sensitivity and Impedance	
VIDEO (DVD, VIDEO 1, 2, 3):	1 Vp-p, 75 Ω
S VIDEO (DVD, VIDEO 1, 2, 3):	1 Vp-p, 75 Ω (Y) 0.28 Vp-p, 75 Ω (C)
COMPONENT VIDEO 1, 2:	1 Vp-p, 75 Ω (Y) 0.7 Vp-p, 75 Ω (P_B, P_R)
Output Level and Impedance	
VIDEO (VIDEO 1, 2, MONITOR):	1 Vp-p, 75 Ω
S VIDEO (VIDEO 1, 2, MONITOR):	1 Vp-p, 75 Ω (Y) 0.28 Vp-p, 75 Ω (C)
COMPONENT VIDEO OUT:	1 Vp-p, 75 Ω (Y) 0.7 Vp-p, 75 Ω (P_B, P_R)

TUNER SECTION

FM

Tuning Range:	87.50-108.00 MHz (100 kHz steps)
Usable Sensitivity	
Mono:	11.2 dBf, 1.0 µV (75 Ω, IHF) 0.9 µV (75 Ω, DIN)
Stereo:	17.2 dBf, 2.0 µV (75 Ω, IHF) 23 µV (75 Ω DIN)
50 dB Quieting Sensitivity	
Mono:	17.2 dBf, 2.0 µV (75 Ω)
Stereo:	37.2 dBf, 20.0 µV (75 Ω)
Capture Ratio:	2.0 dB
Image Rejection Ratio:	40 dB
IF Rejection Ratio:	90 dB
Signal-to-Noise Ratio	
Mono:	76 dB
Stereo:	70 dB
Alternate Channel Attenuation:	55 dB
Selectivity:	50 dB (DIN)
AM Suppression Ratio:	50 dB
Total Harmonic Distortion	
Mono:	0.2%
Stereo:	0.3%
Frequency Response:	30 Hz-15 kHz, –1.0 dB
Stereo Separation:	45 dB at 1 kHz 30 dB at 100 Hz-10 kHz

AM

Tuning Range:	530-1,710 kHz (10 kHz steps)
Usable Sensitivity:	30 µV
Image Rejection Ratio:	40 dB
IF Rejection Ratio:	40 dB
Signal-to-Noise Ratio:	40 dB
Total Harmonic Distortion:	0.7%

GENERAL

Power Supply and Power Consumption:	
AC 120 V, 60 Hz	5.2 A
Dimensions (W × H × D):	17-1/8" × 5-7/8" × 14-13/16" 435 × 150 × 376 mm
Weight:	21.8 lbs., 9.9 kg

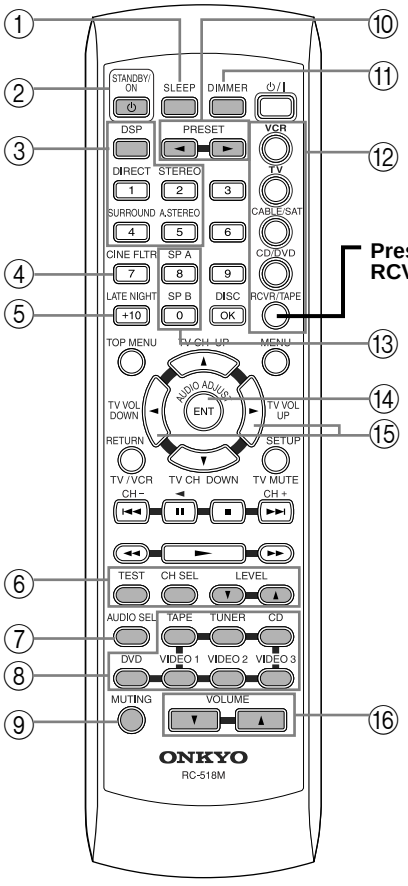
REMOTE CONTROL

Transmitter:	Infrared
Signal range:	Approx. 16 ft., 5 meters
Power supply:	Two “AA” batteries (1.5 V × 2)

Specifications and features are subject to change without notice. Power supply and voltage vary depending on the area in which the unit is purchased.

Remote Controller—RCVR Mode

RC-518M



This page describes only those buttons that can be used to control the HT-R510 when the remote controller is in RCVR mode (Receiver mode).

To select RCVR mode, press the [RCVR] button.

① **SLEEP button**

This button is used to set the Sleep function. This function can be set only with the remote controller.

② **STANDBY/ON button**

This button is used to set the HT-R510 to On or Standby.

③ **Listening mode buttons**

These buttons are used to select the listening modes.

④ **CINE FLTR button**

This button is used to set the Cinema Filter function.

⑤ **LATE NIGHT button**

This button is used to set the Late Night function.

⑥ **TEST, CH SEL & LEVEL [▲] [▼] buttons**

These buttons are used to set the level of each speaker individually. This function can be set only with the remote controller.

⑦ **AUDIO SEL button**

This button is used to select analog or digital inputs for the CD, DVD, TAPE, VIDEO 1, VIDEO 2, and VIDEO 3 sources.

⑧ **Input selector buttons**

These buttons are used to select the audio and video sources: CD, DVD, TAPE, TUNER, VIDEO 1, VIDEO 2, and VIDEO 3.

⑨ **MUTING button**

This button is used to mute the HT-R510. This function can be set only with the remote controller.

⑩ **PRESET [◀] [▶] buttons**

These buttons are used to select radio presets.

⑪ **DIMMER button**

This button is used to adjust the display brightness.

⑫ **Remote Controller Mode buttons**

These buttons are used to select the remote controller modes. To select RCVR mode, press the [RCVR] button.

⑬ **SP A & SP B buttons**

These buttons are used to turn on and off speaker sets A and B individually.

⑭ **AUDIO ADJUST button**

This button is used to set the Bass, Treble, Late Night, Cinema Filter, Center Image, Panorama, Dimension, and Center Width functions.

⑮ **ADJUST [◀] [▶] buttons**

These buttons are used to adjust the functions selected with the AUDIO ADJUST button.

⑯ **VOLUME [▲] [▼] buttons**

These buttons are used to set the volume of the HT-R510.

Precautions—*Continued*

1. **Recording Copyright**—Unless it's for personal use only, recording copyrighted material is illegal without the permission of the copyright holder.
2. **AC Fuse**—The AC fuse inside the HT-R510 is not user-serviceable. If you cannot turn on the HT-R510, contact your Onkyo dealer.
3. **Care**—Occasionally you should dust the HT-R510 all over with a soft cloth. For stubborn stains, use a soft cloth dampened with a weak solution of mild detergent and water. Dry the HT-R510 immediately afterwards with a clean cloth. Don't use abrasive cloths, thinners, alcohol, or other chemical solvents, because they may damage the finish or remove the panel lettering.
4. **Power**

WARNING

BEFORE PLUGGING IN THE UNIT FOR THE FIRST TIME, READ THE FOLLOWING SECTION CAREFULLY.

AC outlet voltages vary from country to country. Make sure that the voltage in your area meets the voltage requirements printed on the HT-R510's rear panel (AC 120 V, 60 Hz).

Setting the [STANDBY/ON] switch to STANDBY does not fully shutdown the HT-R510. If you do not intend to use the HT-R510 for an extended period, remove the power cord from the AC outlet.

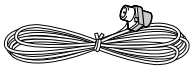
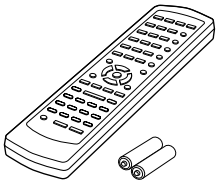
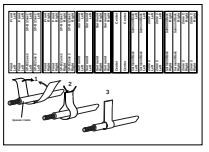
Memory backup

The HT-R510 uses a battery-less memory backup system in order to retain radio presets and other settings when it's unplugged or in the case of a power failure. Although no batteries are required, the HT-R510 must be plugged into an AC outlet in order to charge the backup system.

Once it has been charged, the HT-R510 will retain the settings for several weeks, although this depends on the environment and will be shorter in humid climates.

Supplied Accessories

Make sure you have the following accessories:

			
AM loop antenna	**Indoor FM antenna**	**Remote controller & two batteries (AA/R6)**	**Speaker cable labels**

* In catalogs and on packaging, the letter added to the end of the product name indicates the color of the HT-R510. Specifications and operation are the same regardless of color.

Features

Amp

- 6-channel amplifier
- 100 watts per channel min. RMS at 8 Ω, 2 channels driven from 20 Hz to 20 kHz with no more than 0.08% total harmonic distortion
- WRAT (Wide Range Amplifier Technology)
- Optimum gain volume circuitry

Audio/Video

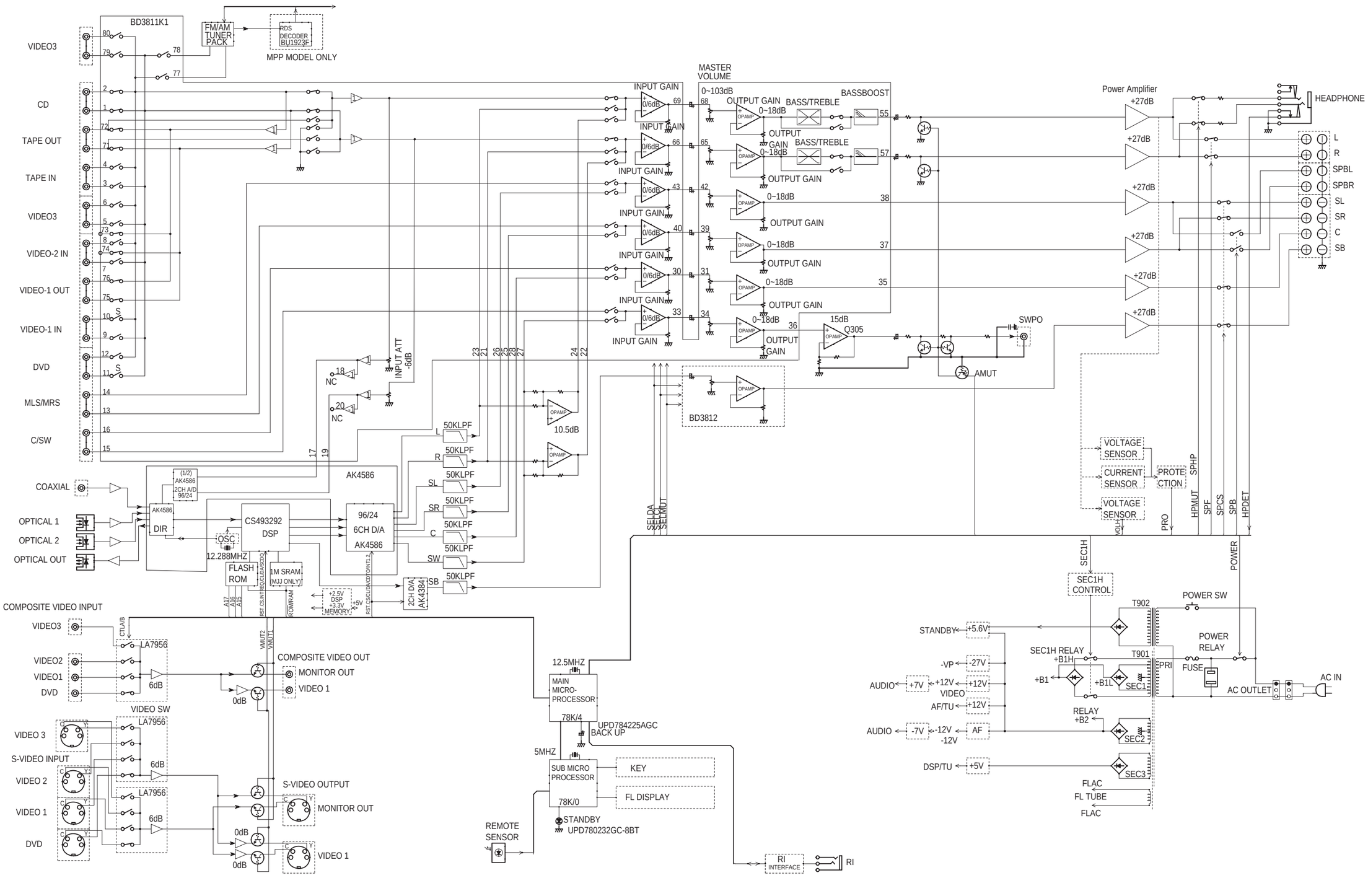
- Dolby[*1] Digital EX and Dolby Pro Logic II
- DTS, DTS-ES Matrix/Discrete 6.1, and DTS Neo:6 processing[*2]
- Cinema Filter function
- Advanced 24-bit DSP chip (5 DSP soundfields)
- Linear PCM 96 kHz/24-bit D/A converters on all channels
- Adjustable crossover (60, 80, 100, 120, 150 Hz)
- 2 component video inputs, 1 output
- 4 S-Video inputs, 2 outputs
- 3 assignable digital inputs (2 optical, 1 coaxial)
- Subwoofer pre out
- Color-coded multi-channel inputs
- Color-coded speaker terminal posts (SPEAKERS B use push-type terminals)

FM/AM Tuner

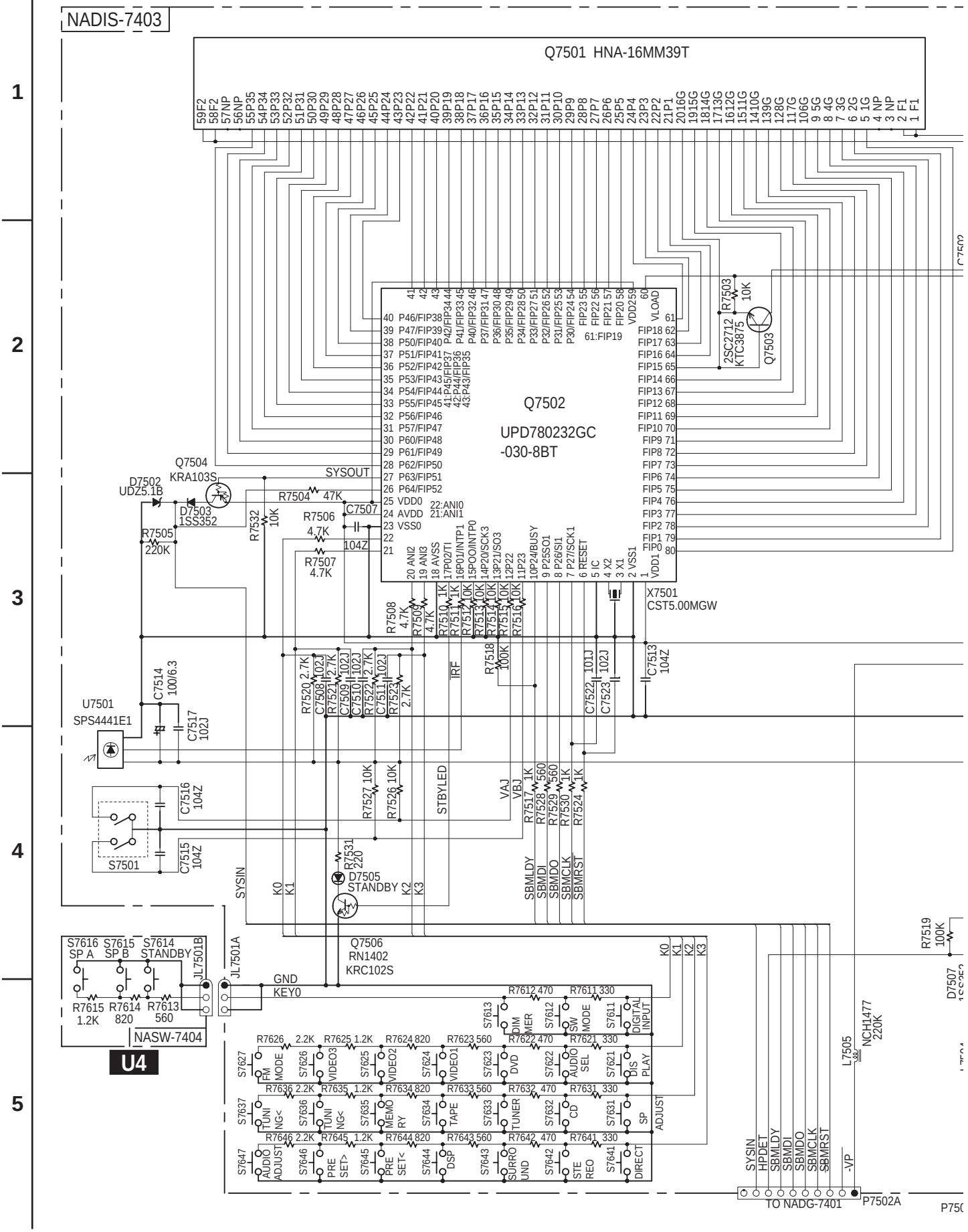
- 30 FM/AM presets
- FM auto tuning

*1. Manufactured under license from Dolby Laboratories. "Dolby", "Pro Logic" and the double-D symbol are trademarks of Dolby Laboratories.
*2. "DTS," "DTS-ES Extended Surround," and "Neo:6" are trademarks of Digital Theater Systems, Inc.

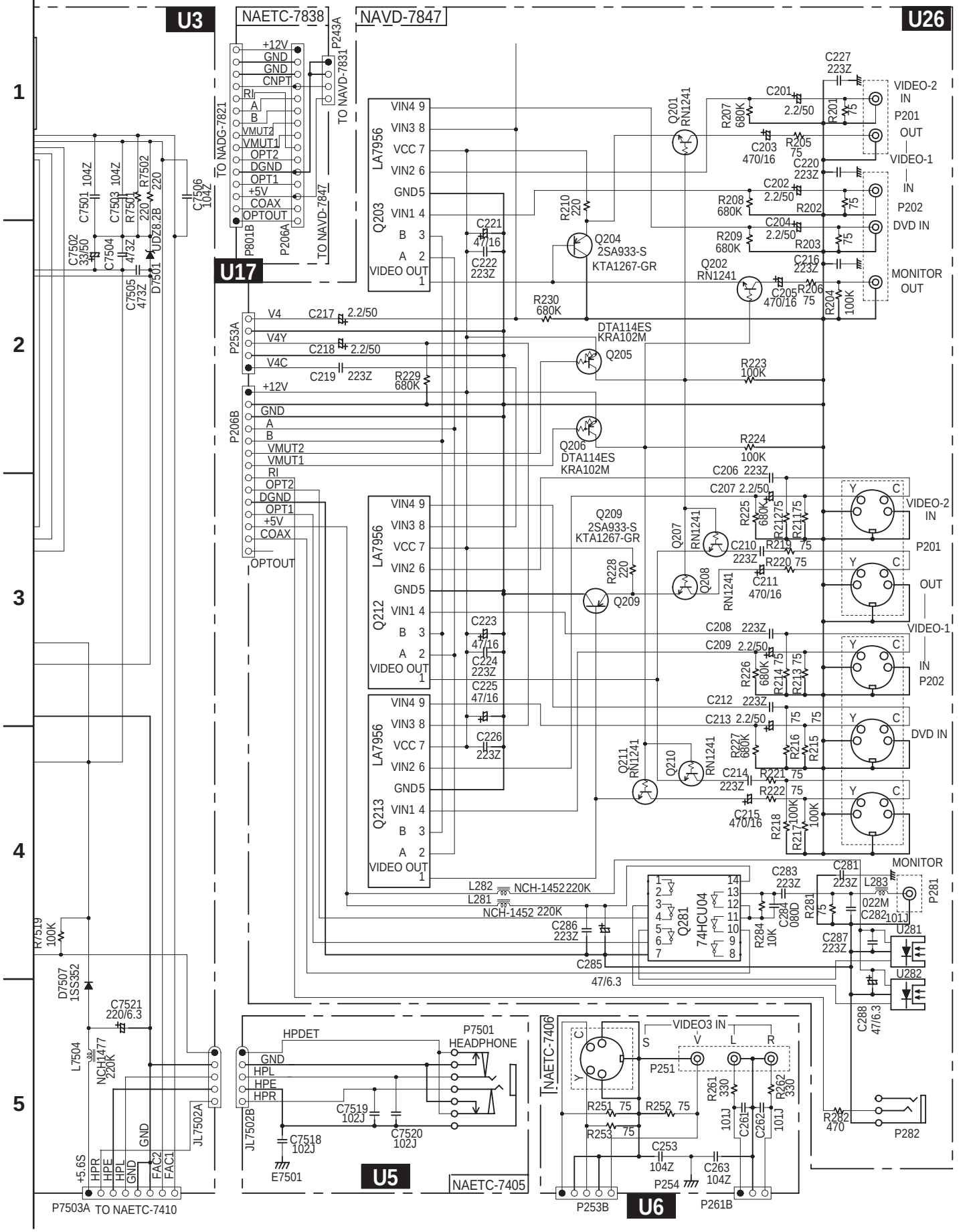
BLOCK DIAGRAM



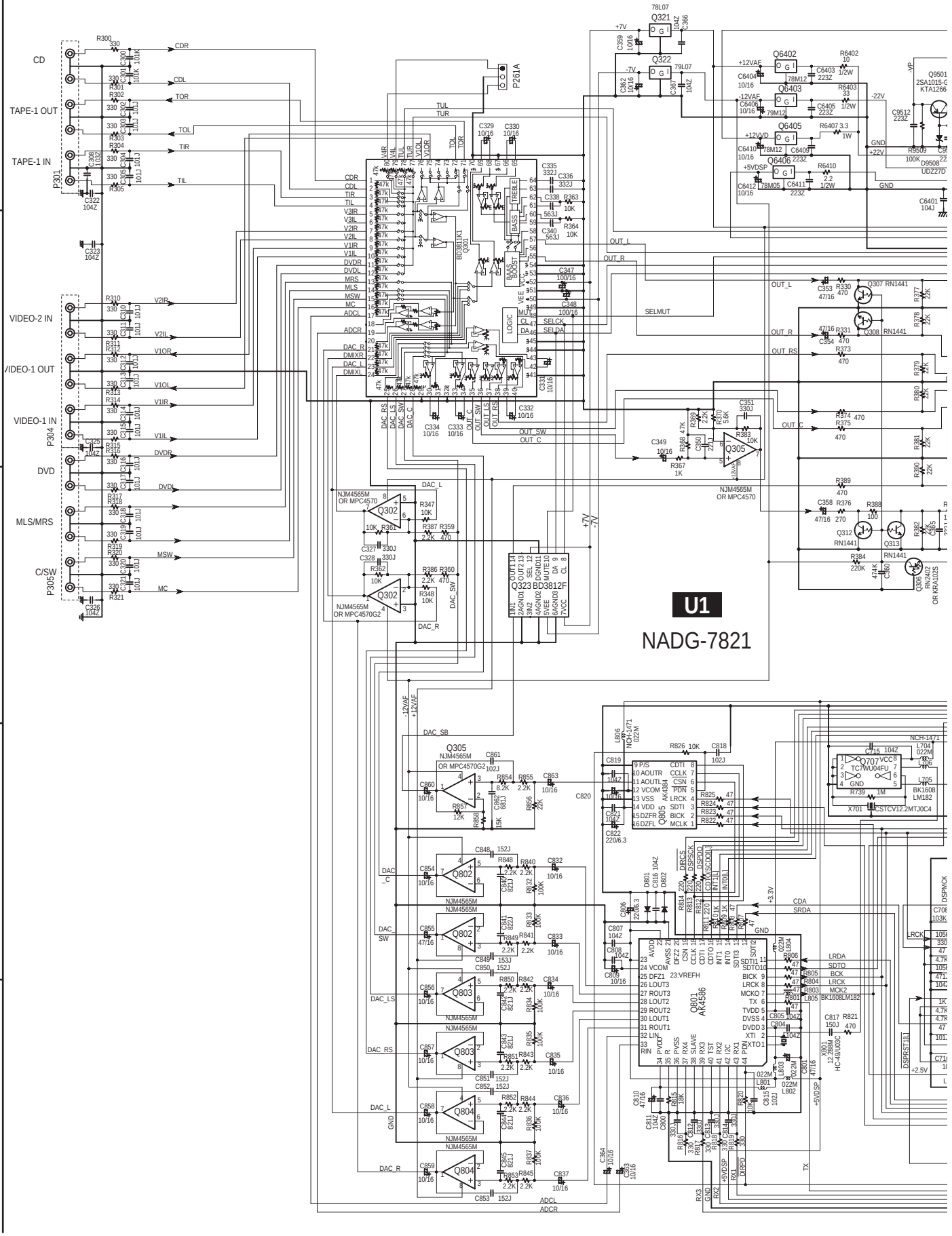
SCHEMATIC DIAGRAM 1-1 Display and video sections



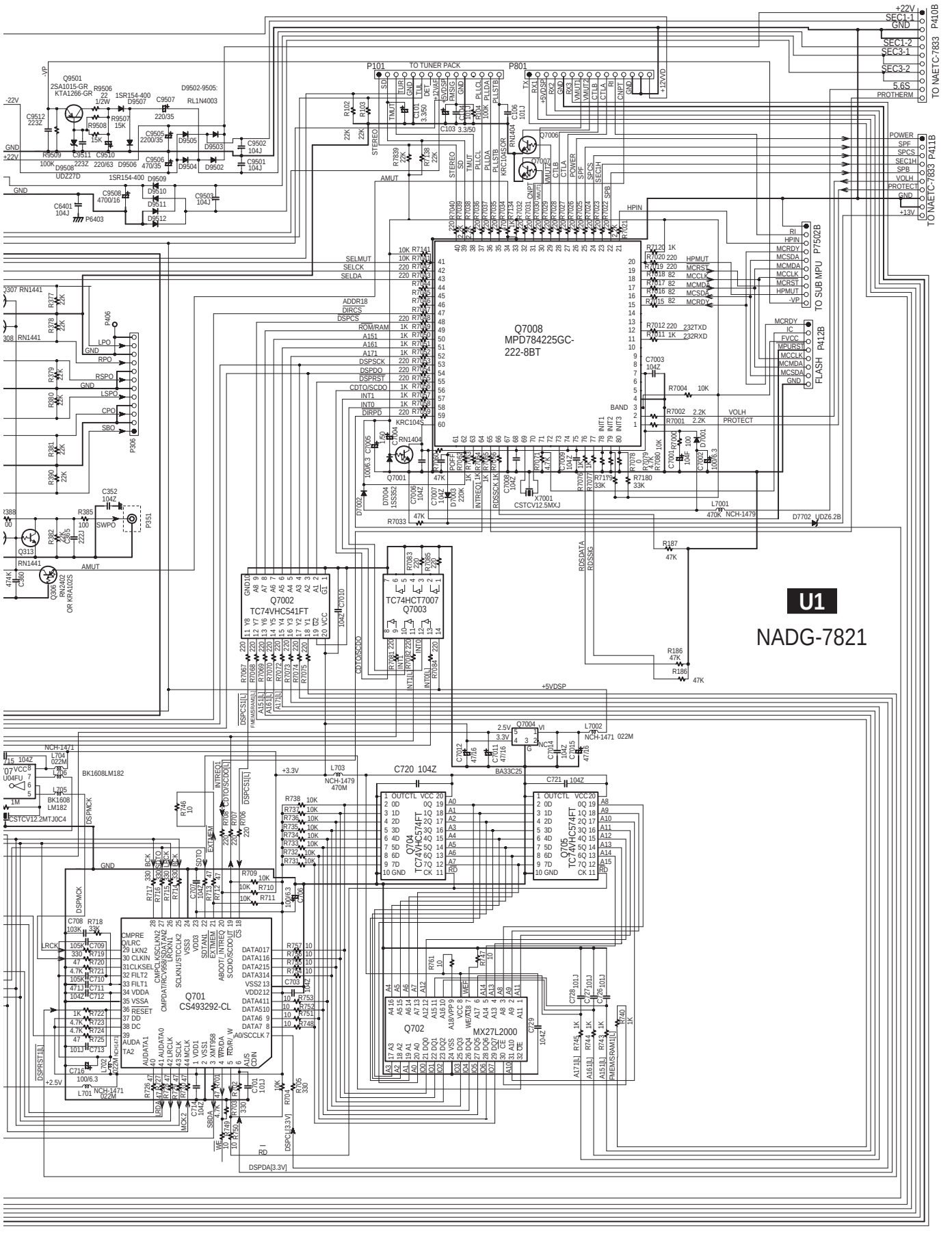
SCHEMATIC DIAGRAM 1-2 Display and video sections



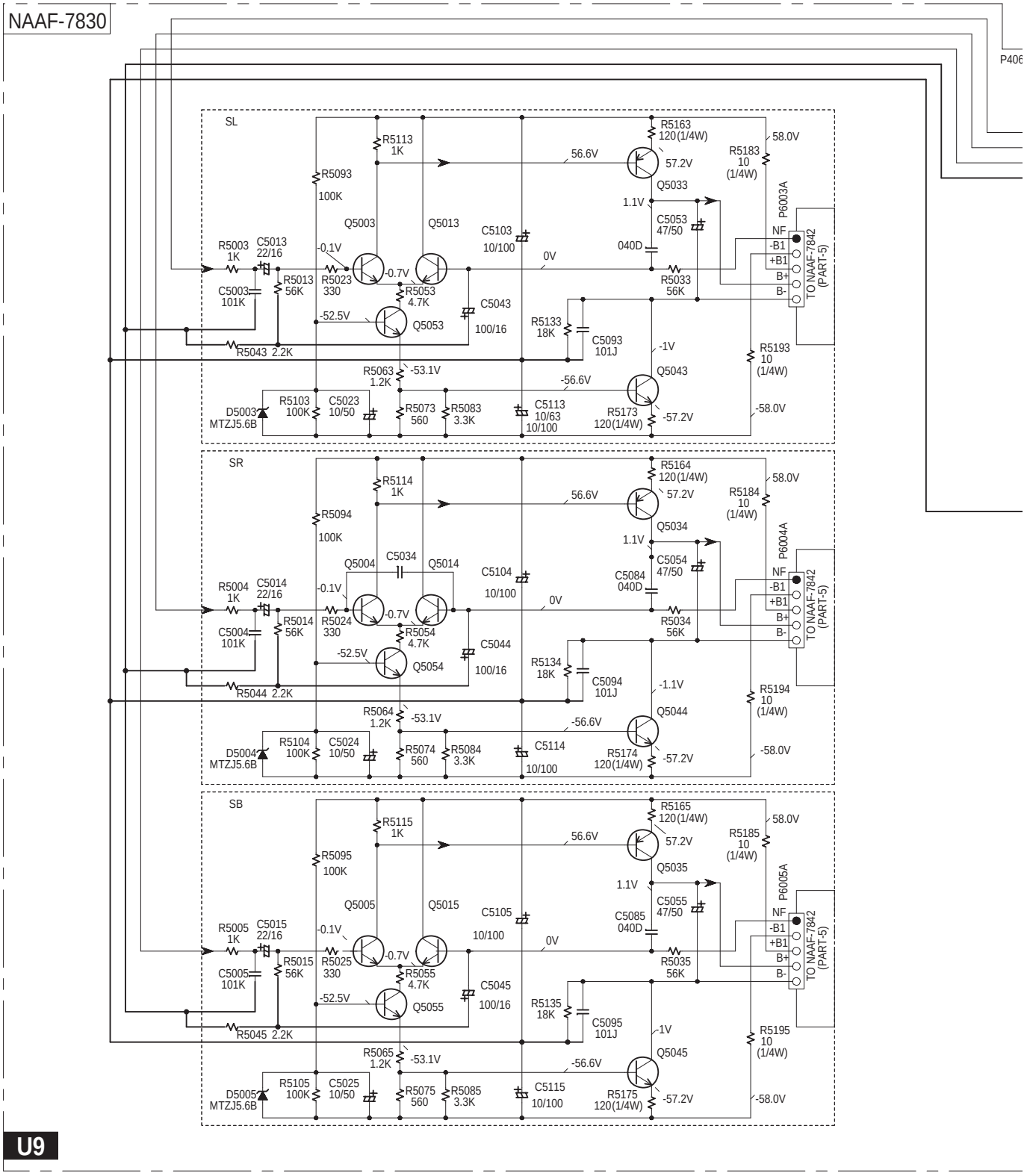
SCHEMATIC DIAGRAM 2-1 Digital and main microprocessor sections



SCHEMATIC DIAGRAM 2-2 Digital and main microprocessor sections



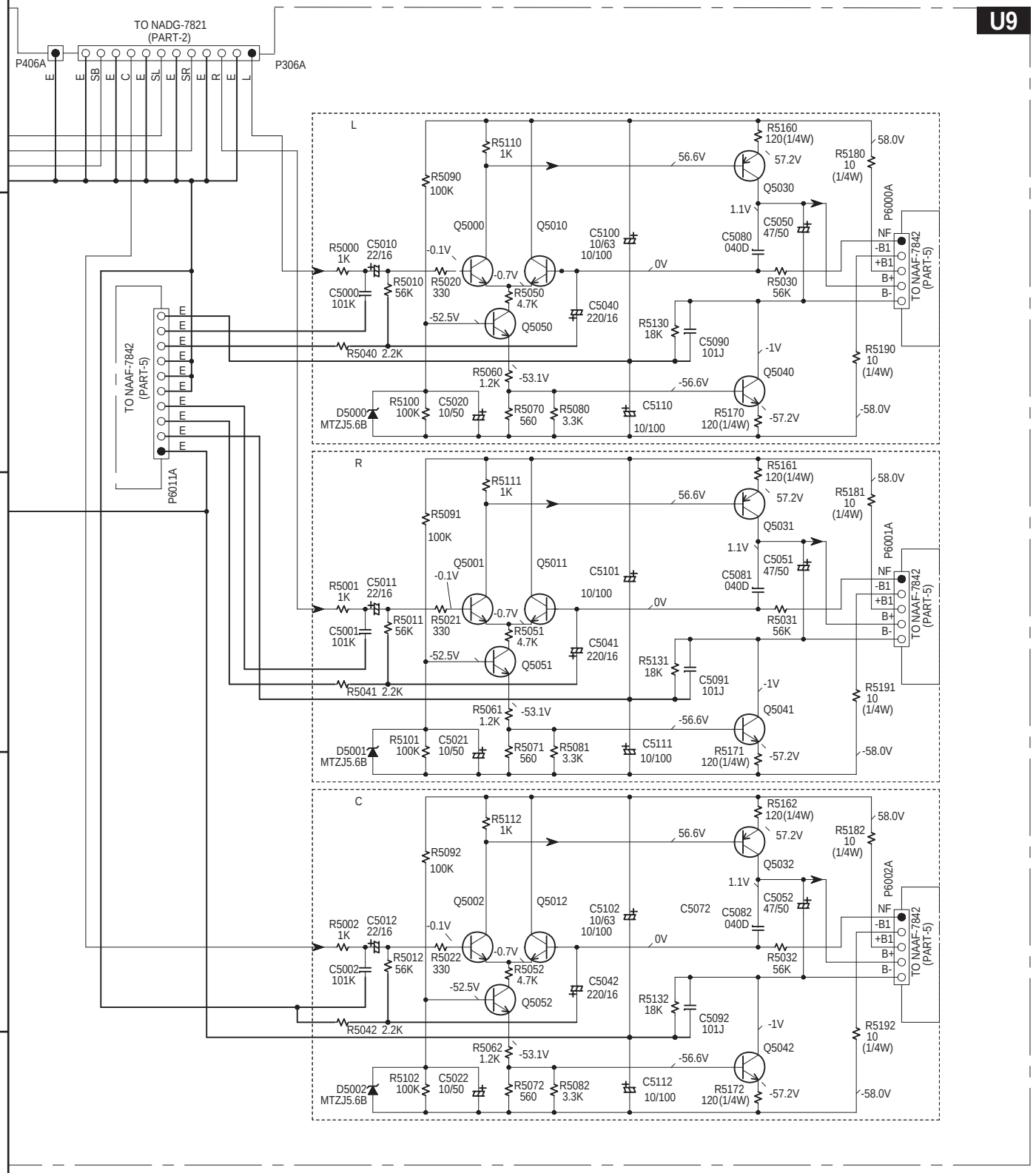
SCHEMATIC DIAGRAM 3-1 Driver amplifier section



TRANSISTORS

CIRCUIT NO.	
Q5000-05,5010-15	KTC3200-BL OR 2SC1775A-E,F OR 2SC1845-E
Q5030-35	KTA1024-Y,O OR 2SA949-Y,O
Q5040-45	KTC3206-Y,O OR 2SC2229-Y,O
Q5050-55	KTC3200-BL,GR OR 2SC1775A-E,F OR 2SC1845-E,F

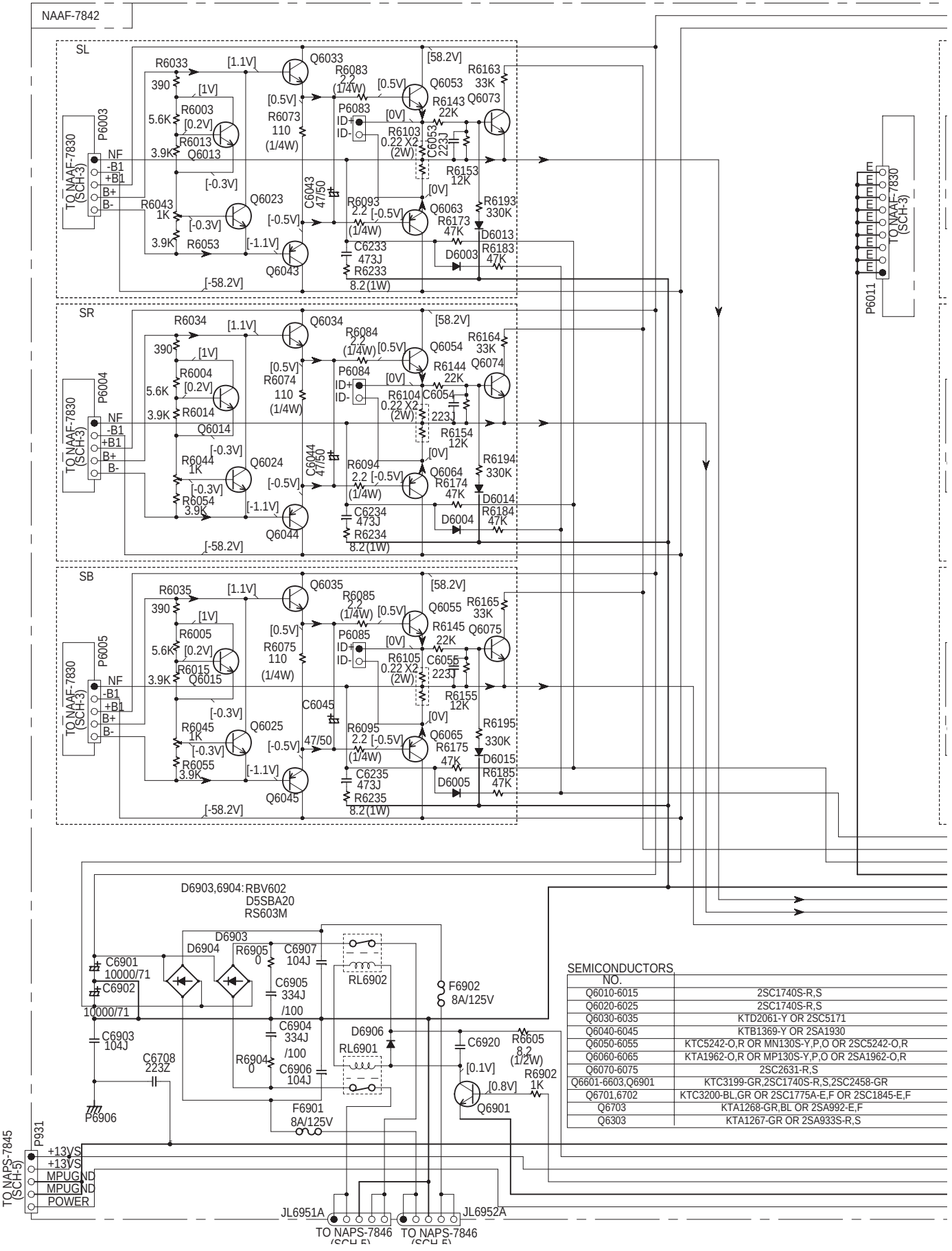
SCHEMATIC DIAGRAM 3-2 Driver amplifier section



TRANSISTORS

CIRCUIT NO.	
Q5000-05,5010-15	KTC3200-BL OR 2SC1775A-E,F OR 2SC1845-E
Q5030-35	KTA1024-Y,O OR 2SA949-Y,O
Q5040-45	KTC3206-Y,O OR 2SC2229-Y,O
Q5050-55	KTC3200-BL,GR OR 2SC1775A-E,F OR 2SC1845-E,F

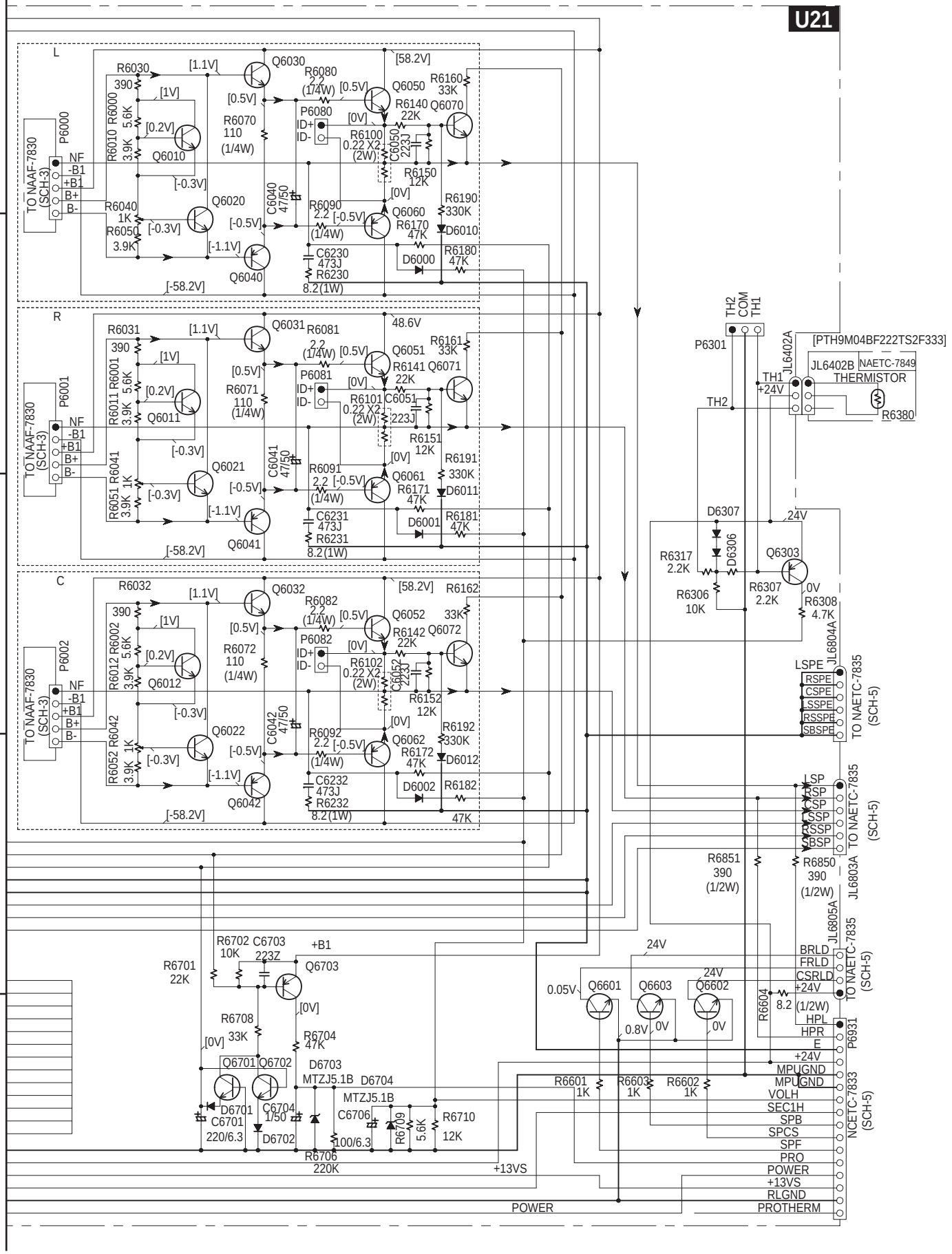
SCHEMATIC DIAGRAM 4-1 Power amplifier section



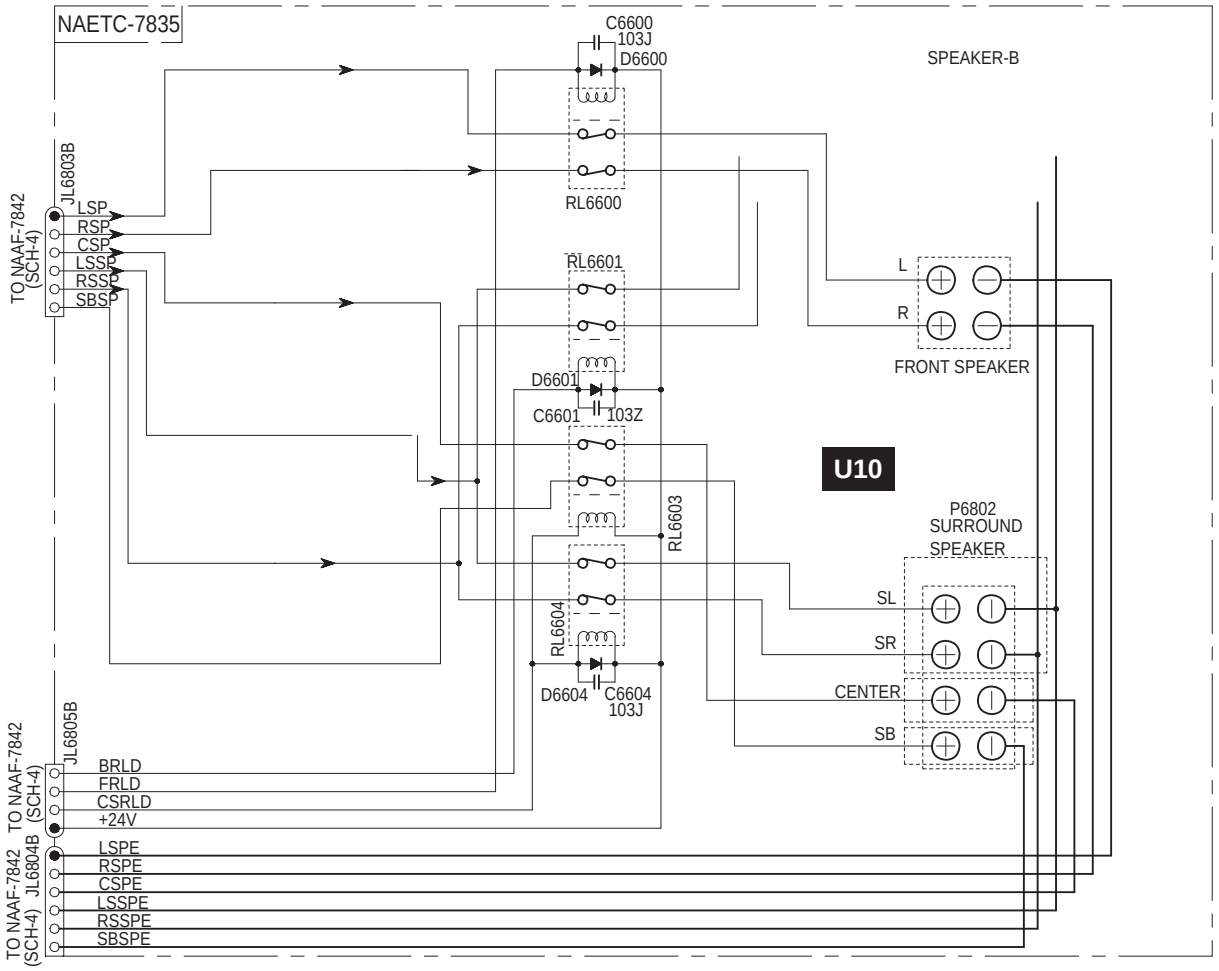
SEMICONDUCTORS

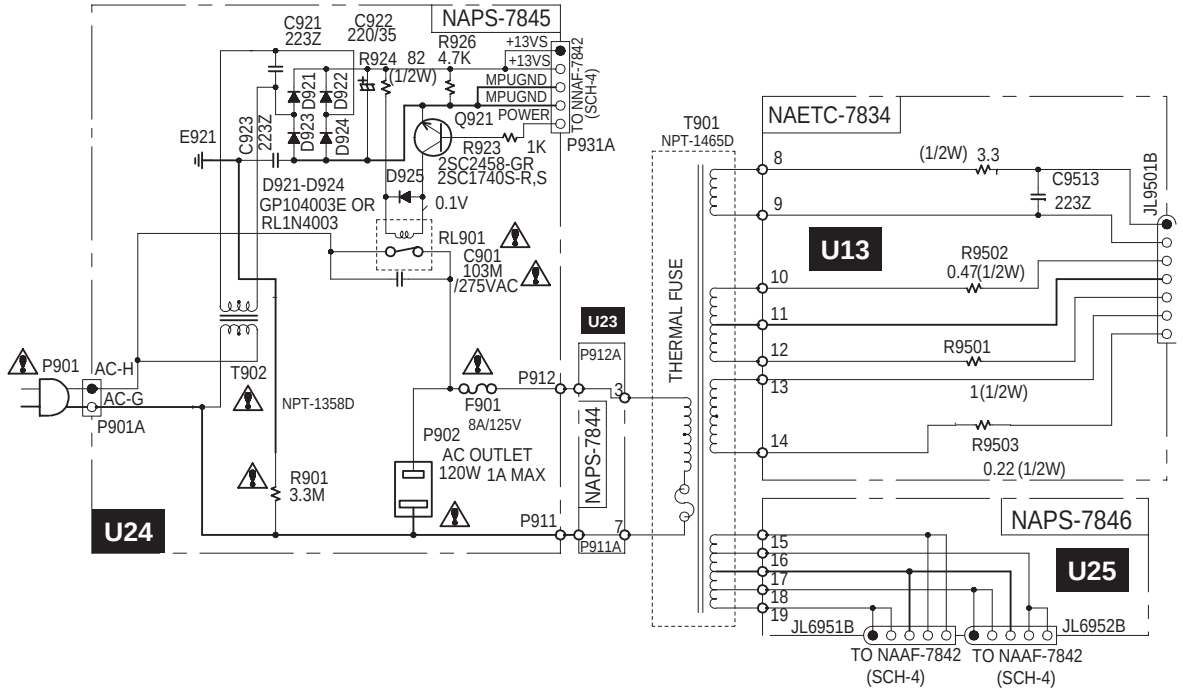
NO.	
Q6010-6015	2SC1740S-R,S
Q6020-6025	2SC1740S-R,S
Q6030-6035	KTD2061-Y OR 2SC5171
Q6040-6045	KTB1369-Y OR 2SA1930
Q6050-6055	KTC5242-O,R OR MN130S-Y,P,O OR 2SC5242-O,R
Q6060-6065	KTA1962-O,R OR MP130S-Y,P,O OR 2SA1962-O,R
Q6070-6075	2SC2631-R,S
Q6601-6603,Q6901	KTC3199-GR,2SC1740S-R,S,2SC2458-GR
Q6701,6702	KTC3200-BL,GR OR 2SC1775A-E,F OR 2SC1845-E,F
Q6703	KTA1268-GR,BL OR 2SA992-E,F
Q6303	KTA1267-GR OR 2SA933S-R,S

SCHEMATIC DIAGRAM 4-2 Power amplifier section

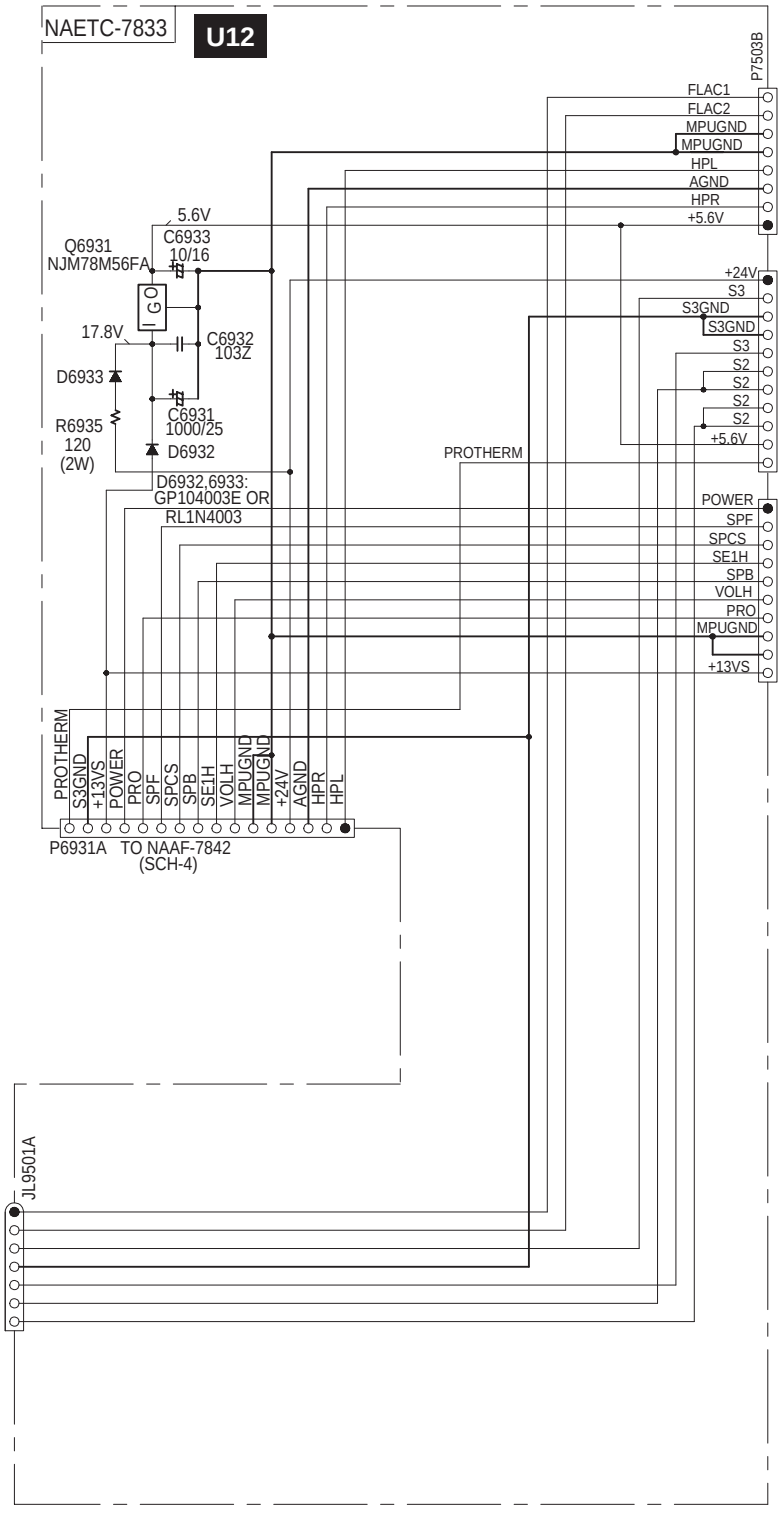


SCHEMATIC DIAGRAM 5-1 Power supply and Speaker terminal sections





SCHEMATIC DIAGRAM 5-2 Power supply and Speaker terminal sections



THIS SYMBOL LOCATED NEAR THE FUSE INDICATES THAT THE FUSE USED IS SLOW OPERATING TYPE FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,REPLACE WITH SAME TYPE FUSE. FOR FUSE RATING REFER TO THE MARKING ADJACENT TO THE SYMBOL

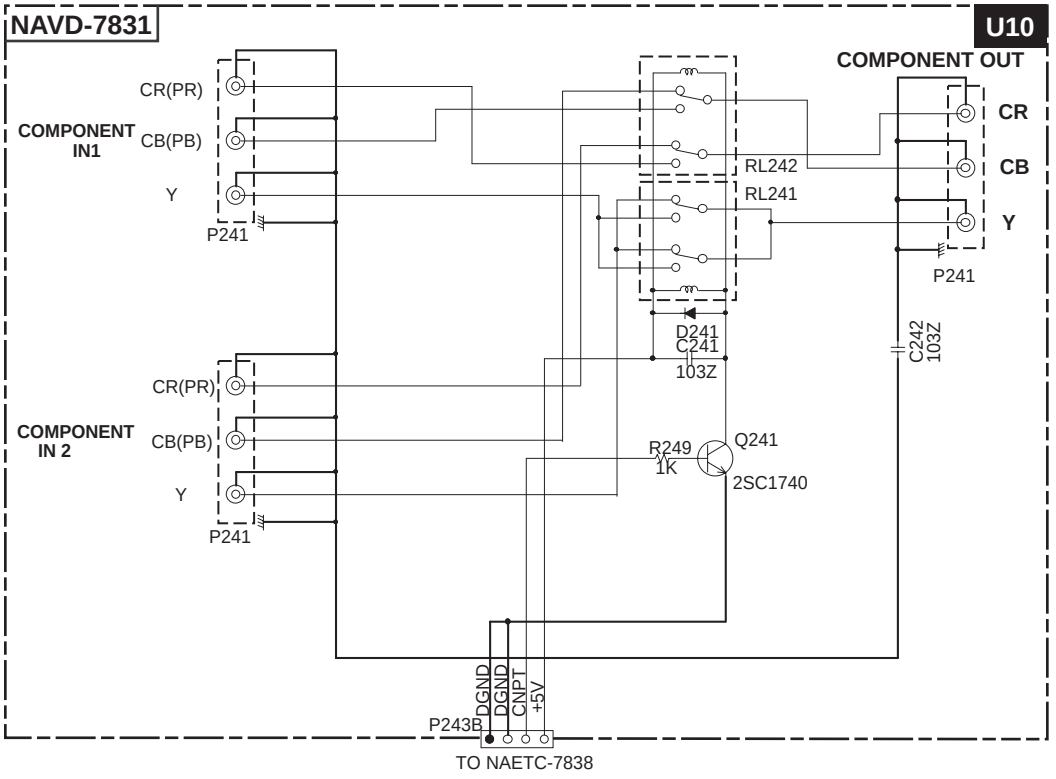
CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH FUSE OF SAME TYPE AND RATING INDICATED.

CE SYMBOLE INDIQUE QUE LE FUSIBLE UTLISE EST E LENT. POUR UNE PROTECTION PERMANENTE,N'UTILISER QUE DES FUSIBLES DE MEME TYPE. CE DARNIER EST INDIQUE LA QU LE PRESENT SYMBOL EST APPOSE.

ATTENTION
AFIN D'ASSURER UNE PROTECTION PERMANENTE CONTRE LES RISQUES D'INCENDIE, REMPLACER UNIQUEMENT PAR UN FUSIBLE DE MEME TYPE ET CALIBRATION COMME INDIQUE.

SCHEMATIC DIAGRAM 6

Video section

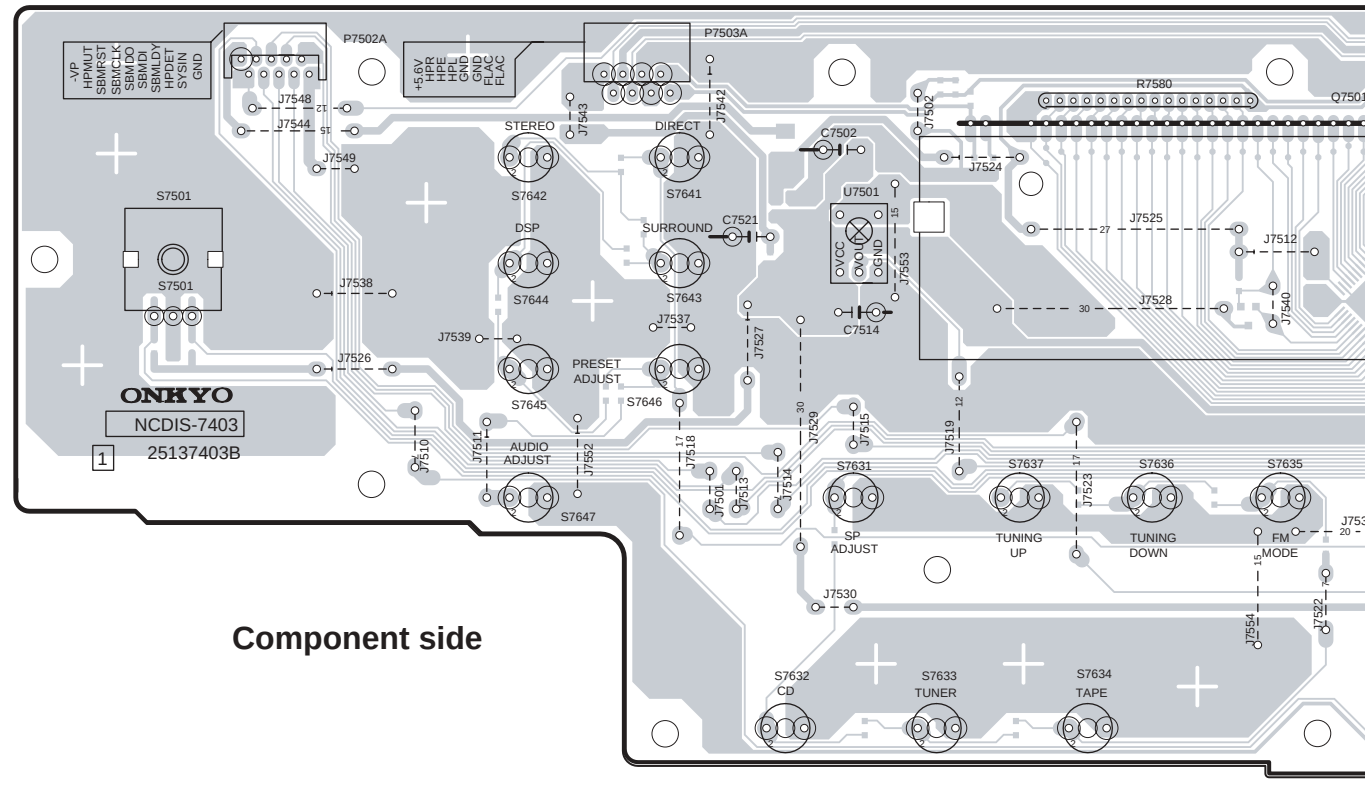


A B C D

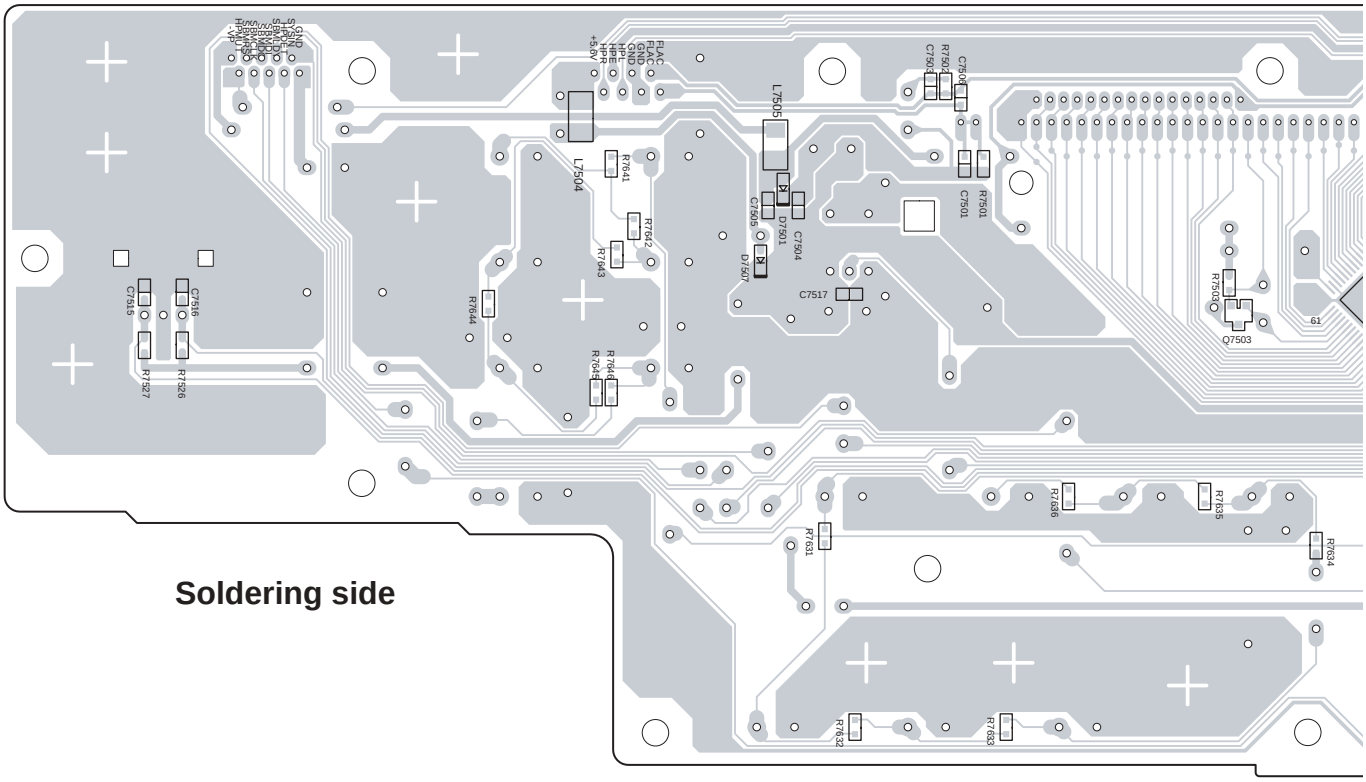
1 2 3 4 5

PRINTED CIRCUIT BOARD VIEW 1

U3 NADIS-7403,Display circuit PC board



Component side



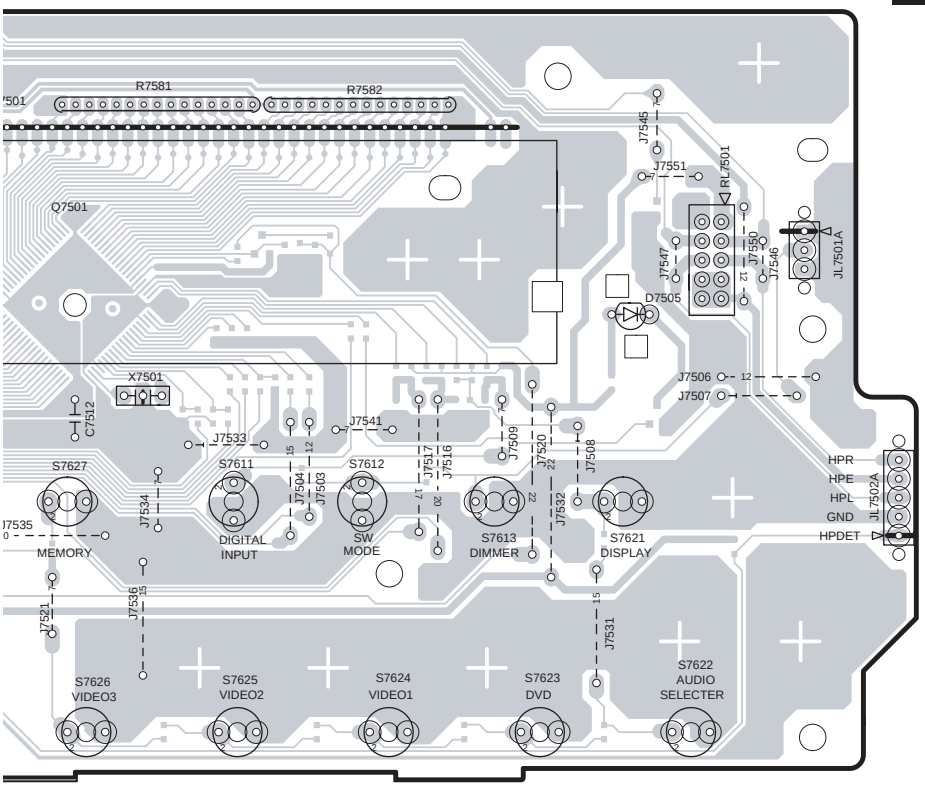
Soldering side

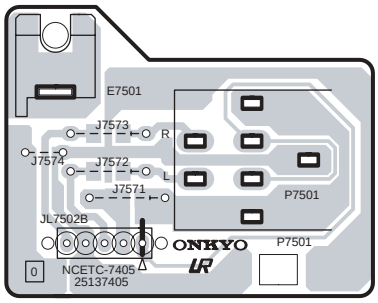
A B C D

PRINTED CIRCUIT BOARD VIEW 1

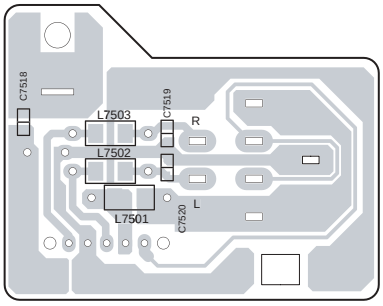
1 2 3 4 5

U5 NAETC-7405,Headphone terminal PC board

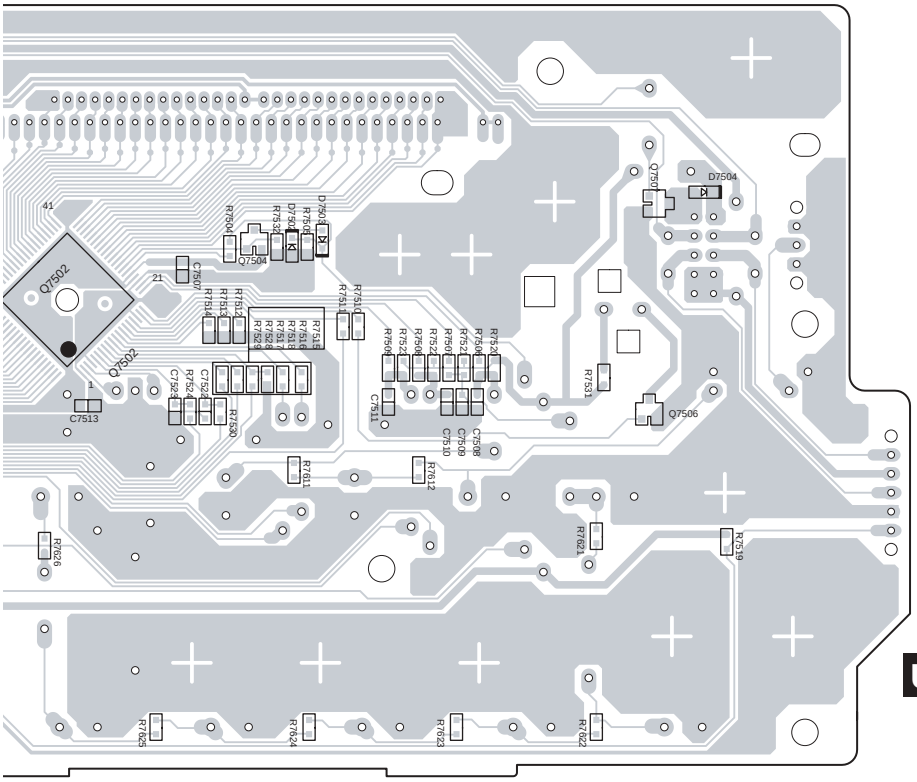


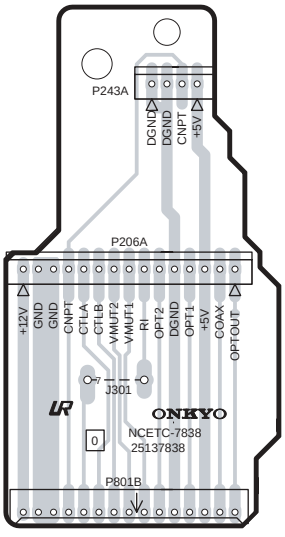


Component side



Soldering side





U17 NAETC-7838,Connector PC board ass'y

A B C D

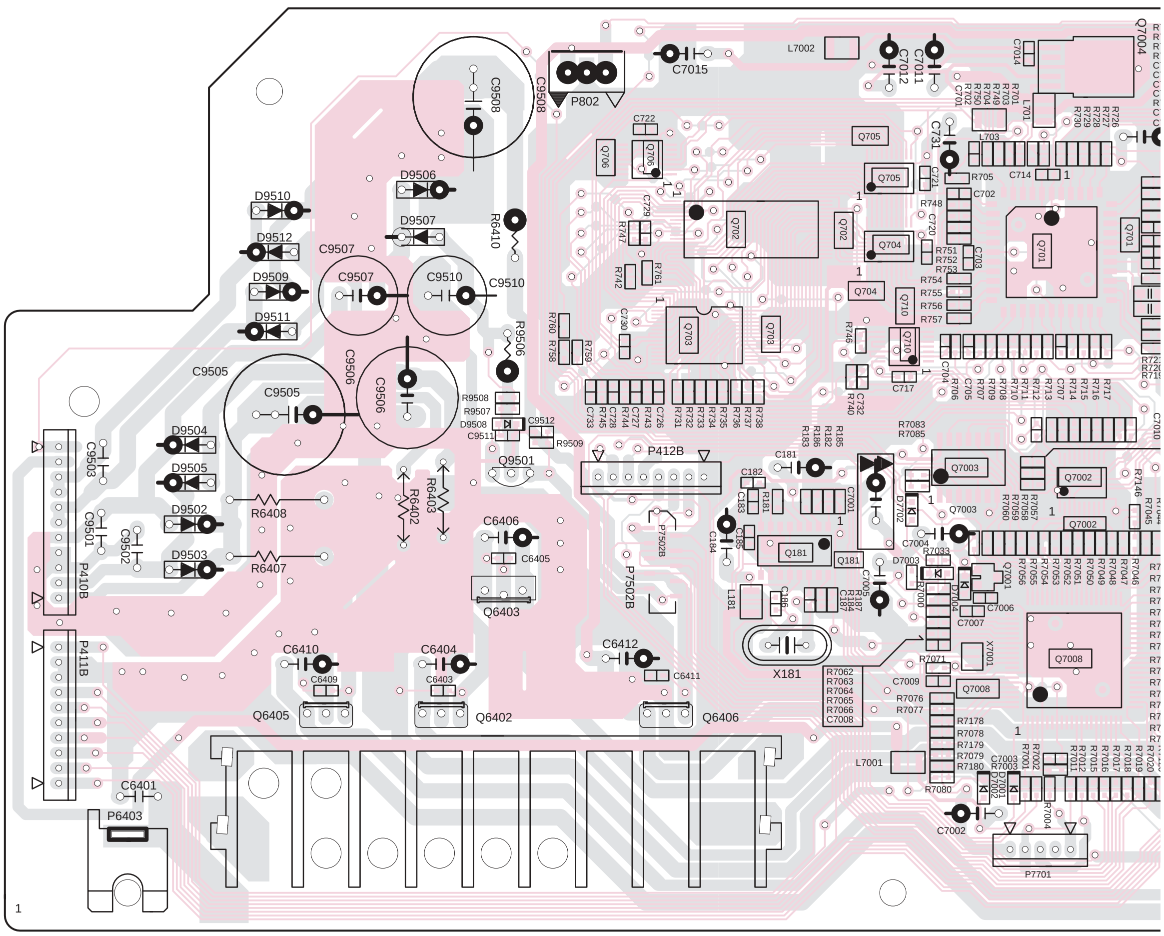
PRINTED CIRCUIT BOARD VIEW 2

1

U1 NADG-7821, DSP circuit PC board

2

3


C9508
P802
C7015
L7002
C7012
C7011
C7014
Q7004
D9506
D9510
D9507
D9512
R6410
C9507
C9510
D9509
D9511
C9505
C9506
R9506
R9508
R9507
D9508
C9511
C9512
R9509
Q9501
D9504
D9505
D9502
D9503
C9503
C9501
C9502
P410B
P411B
R6408
R6407
R6402
R6403
C6406
C6405
Q6403
C6410
C6409
C6404
C6403
Q6405
Q6402
C6412
C6411
Q6406
C6401
P6403
P412B
P7502B
C722
Q706
C729
R747
R742
R761
Q702
Q703
C730
R760
R758
R759
C733
R745
C728
R744
C727
R743
C726
R731
R732
R733
R734
R735
R736
R737
R738
Q705
Q704
C731
C721
R705
C714
L703
L701
C702
R748
C720
R751
R752
R753
C703
R754
R755
R756
R757
Q710
R746
C732
R740
C717
C704
R706
C705
R707
R709
R708
R710
R711
R712
R713
C707
R714
R715
R716
R717
Q701
R7083
R7085
R183
R186
R182
R185
C181
C182
C183
R181
C184
C185
C7001
Q181
L181
C186
C187
R184
R187
C7005
X181
D7702
Q7003
R7146
Q7002
C7004
R7033
D7003
R7000
D7004
Q7001
C7006
C7007
X7001
R7071
R7062
R7063
R7064
R7065
R7066
C7008
C7009
Q7008
R7076
R7077
R7178
R7078
R7179
R7079
R7180
L7001
C7003
R7003
R7001
R7002
D7002
D7001
R7004
R7080
C7002
P7701
C7010

4

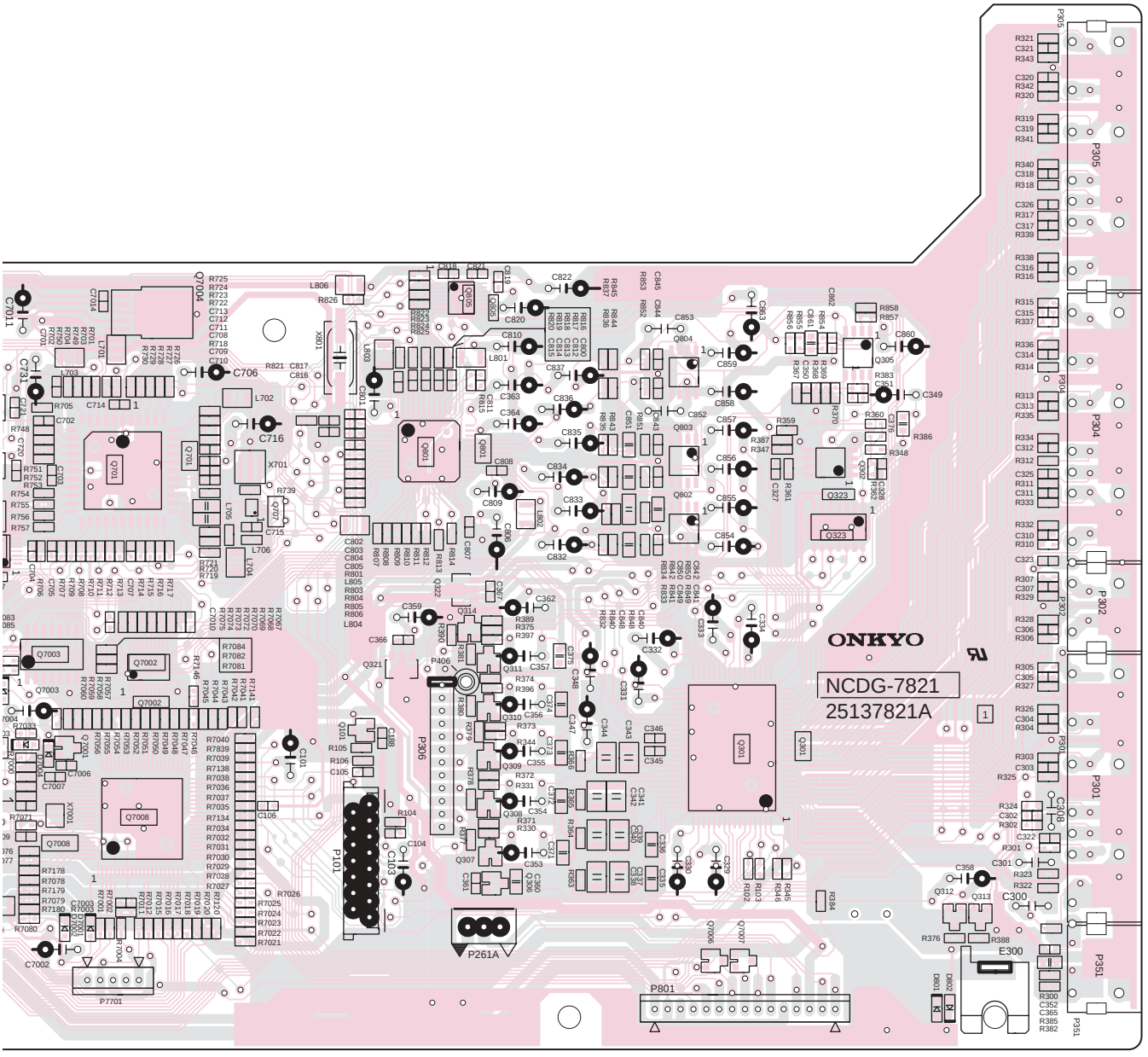
5

A B C D

1 2 3 4 5

PRINTED CIRCUIT BOARD VIEW 2

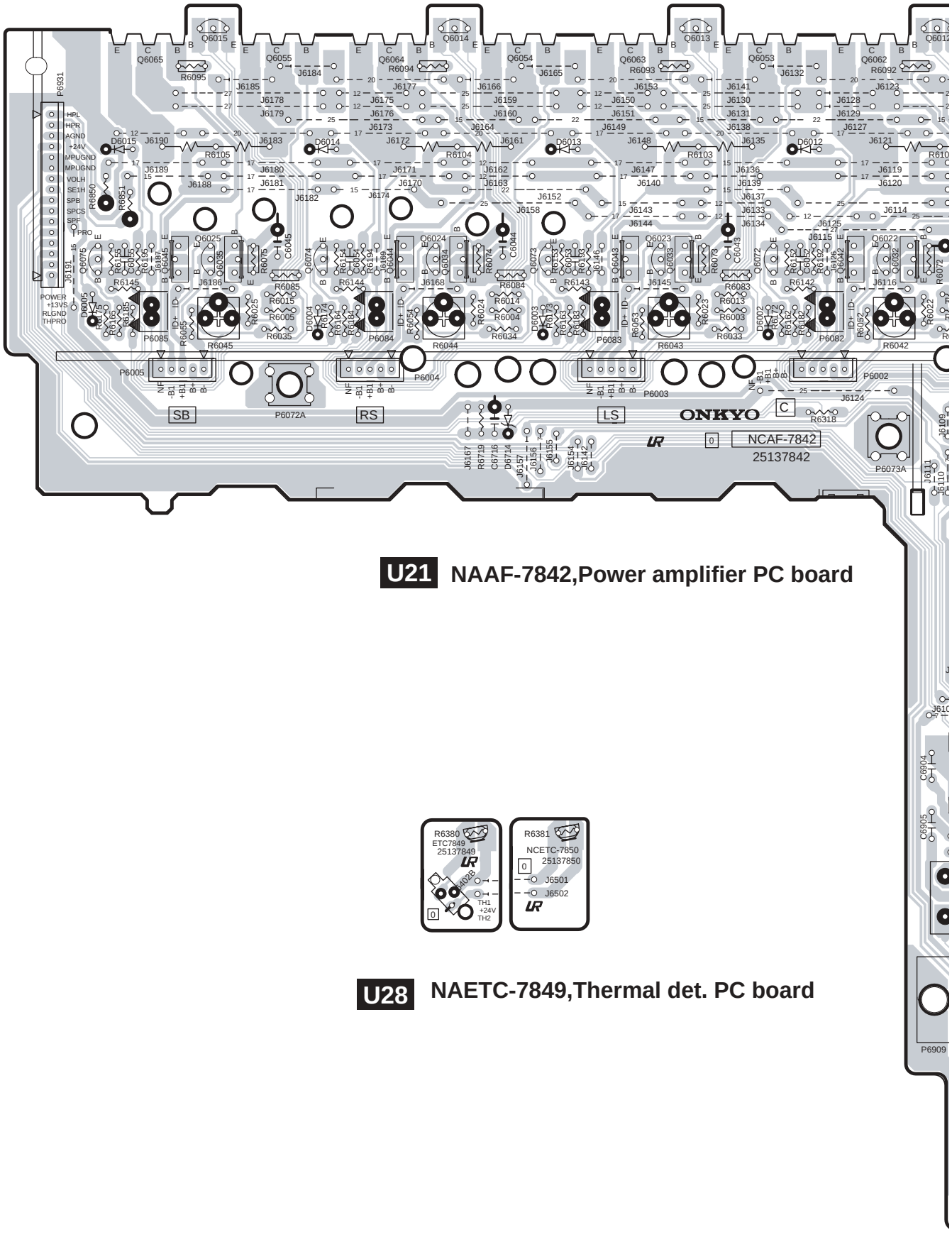
U1 NADG-7821, DSP circuit PC board



A B C D

1 2 3 4 5

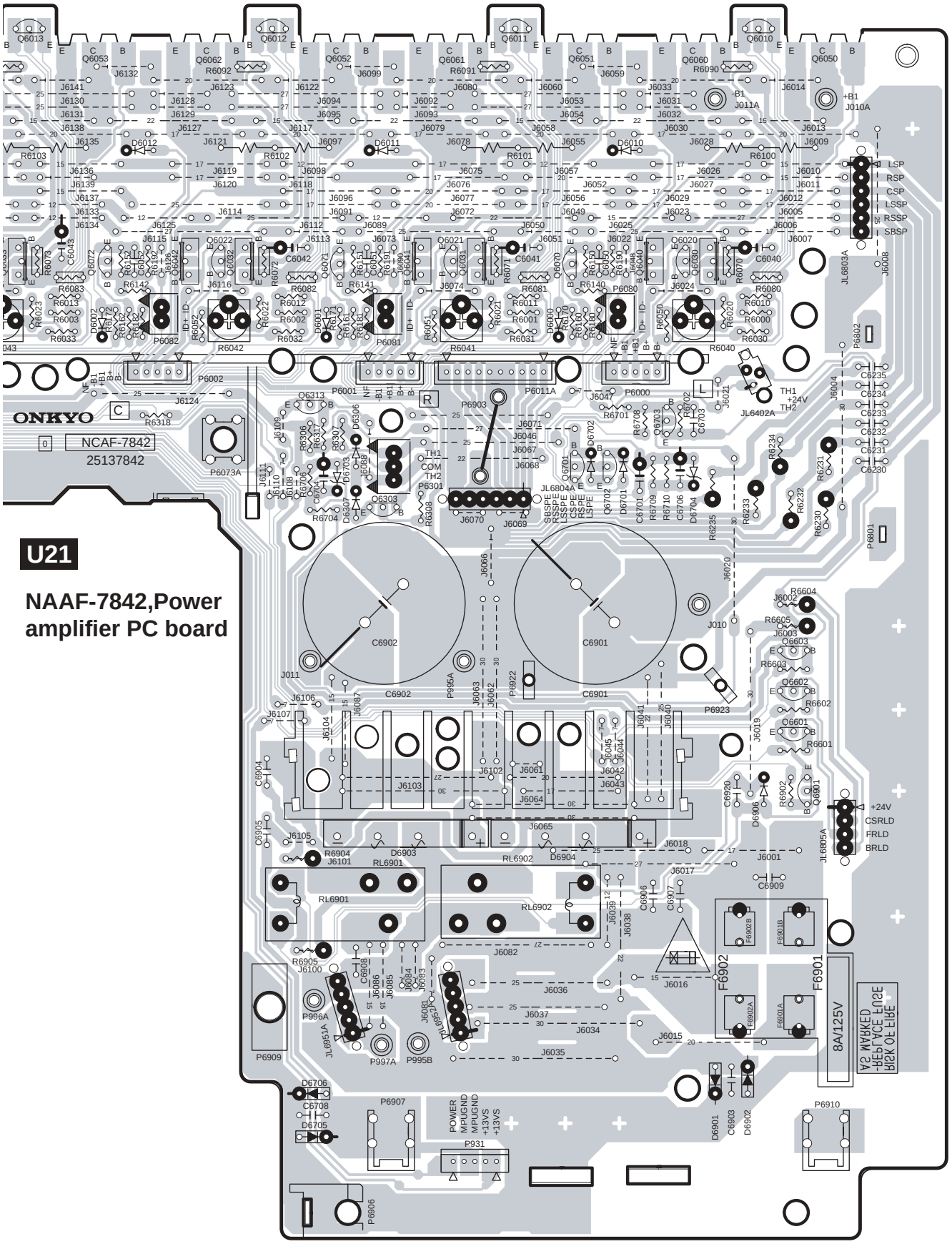
PRINTED CIRCUIT BOARD VIEW 4



U21 NAAF-7842,Power amplifier PC board

U28 NAETC-7849,Thermal det. PC board

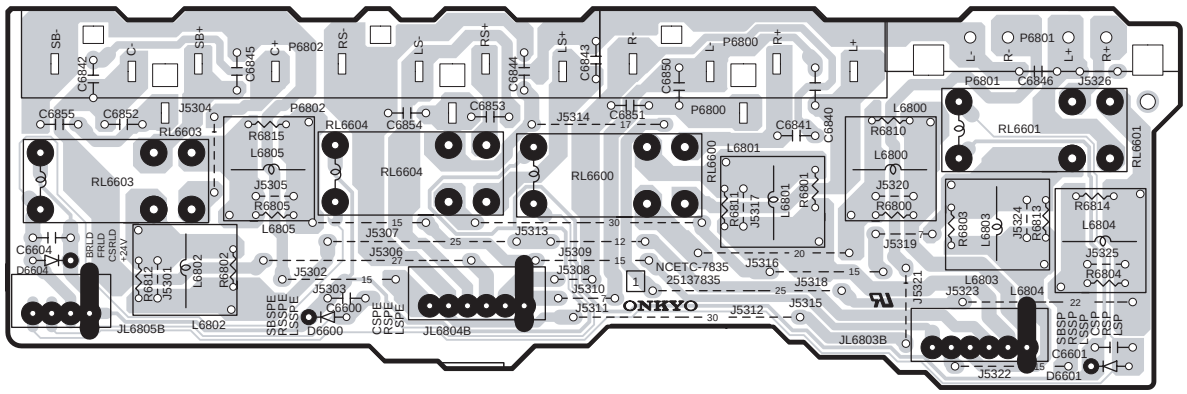
PRINTED CIRCUIT BOARD VIEW 4



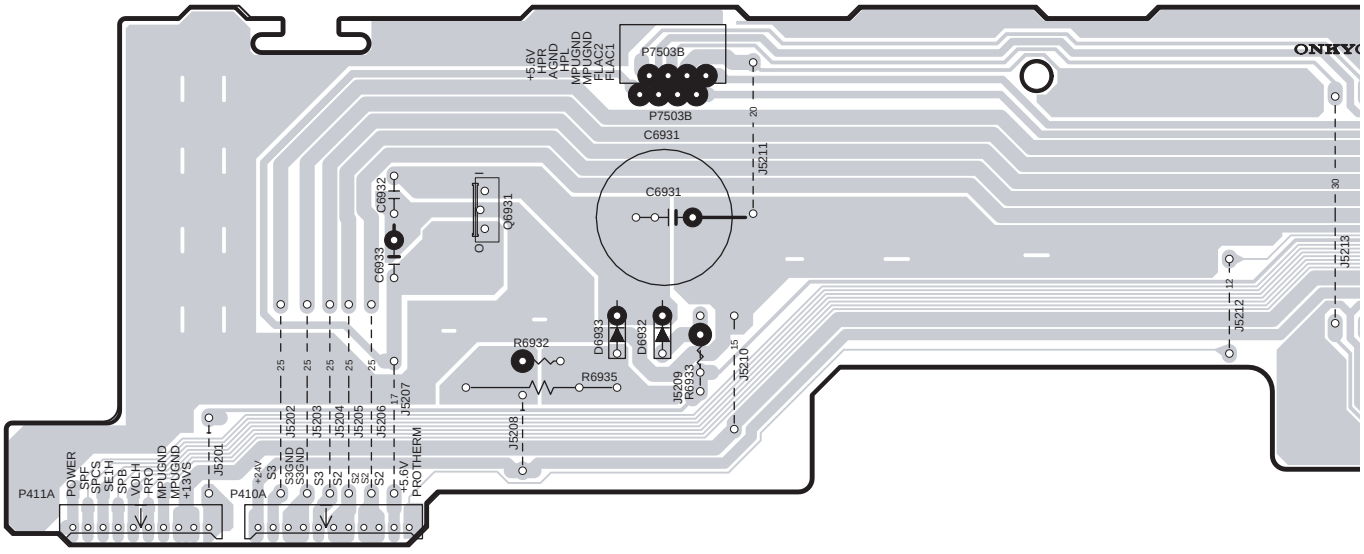
A B C D

1 2 3 4 5

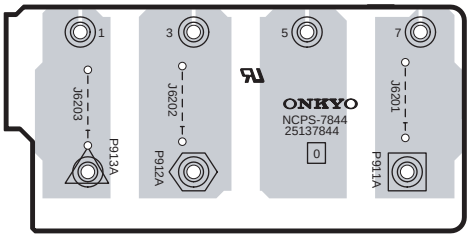
PRINTED CIRCUIT BOARD VIEW 5



U14 NAETC-7835,Speaker terminal PC board

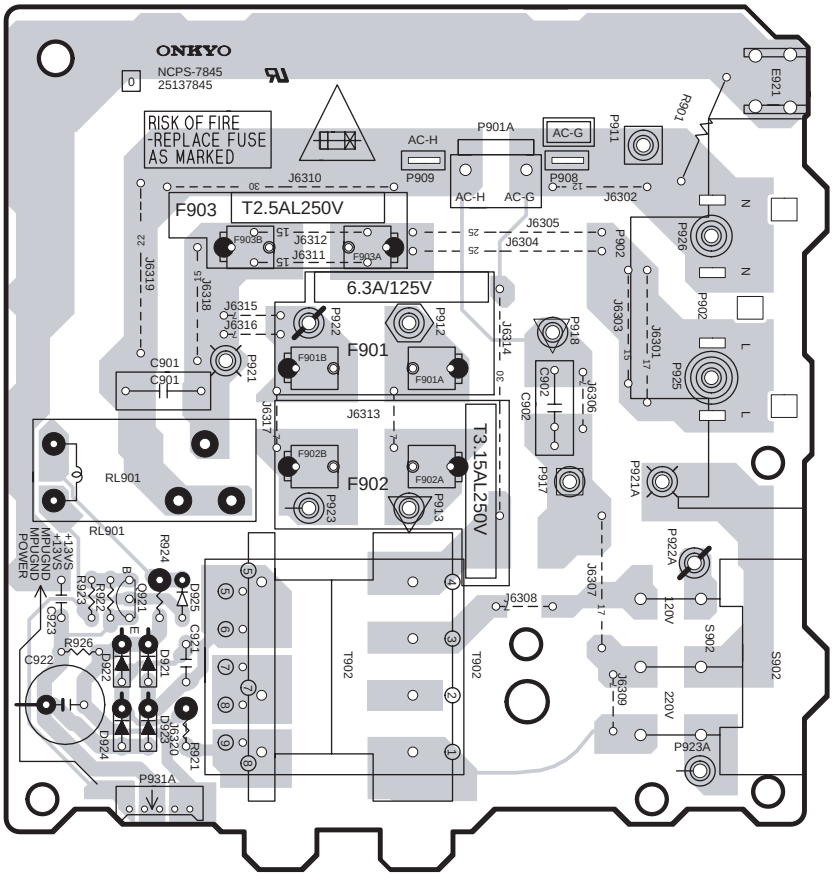


U12 NAETC-7833,Const. Voltage circuit PC board

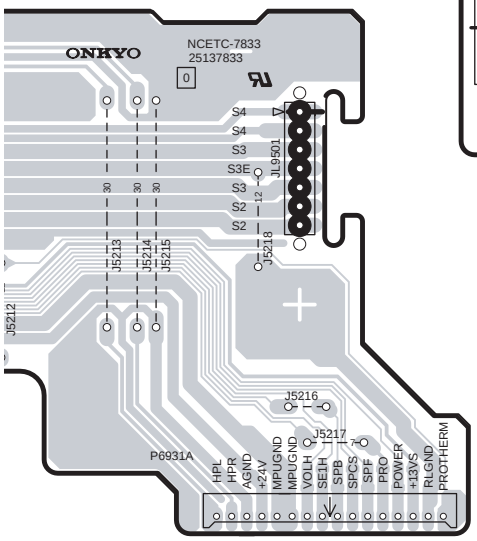


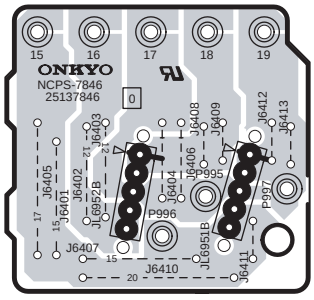
U23 NAPS-7844,Transformer terminal PC board

PRINTED CIRCUIT BOARD VIEW 5

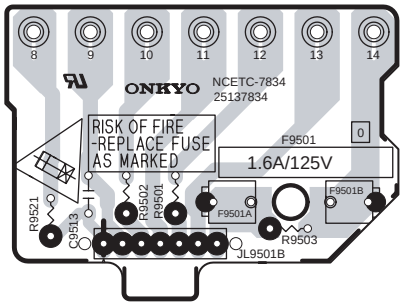


U24 NAPS-7845,Primary circuit PC board



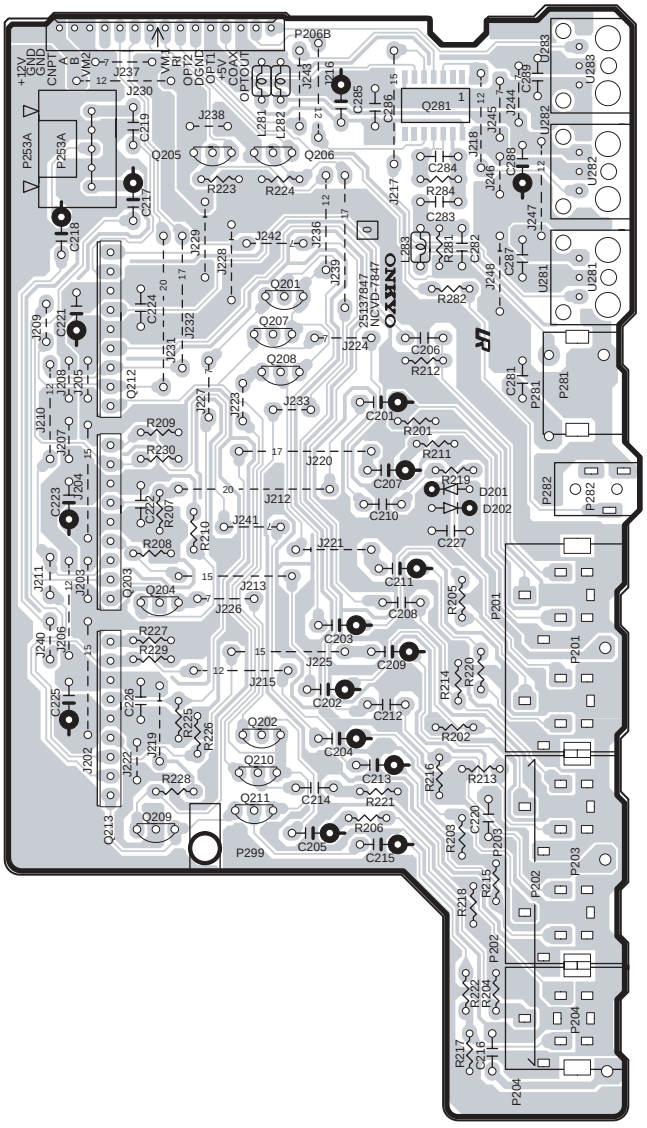


U25 NAPS-7846,Secondary terminal PC board

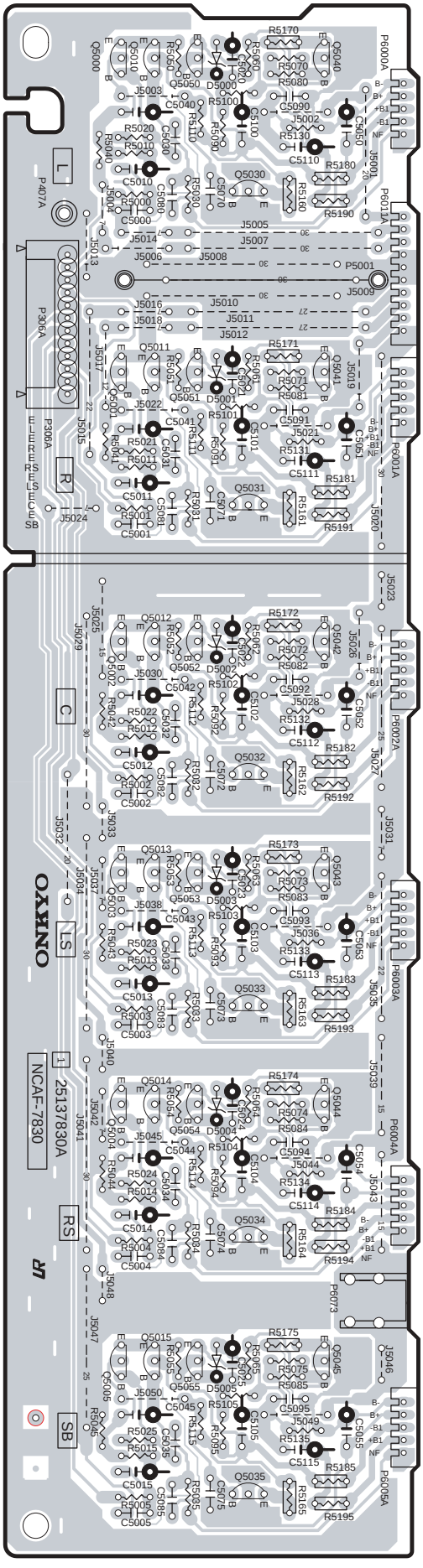


U13 NAPS-7834,Secondary circuit PC board

PRINTED CIRCUIT BOARD VIEW 3
Video section



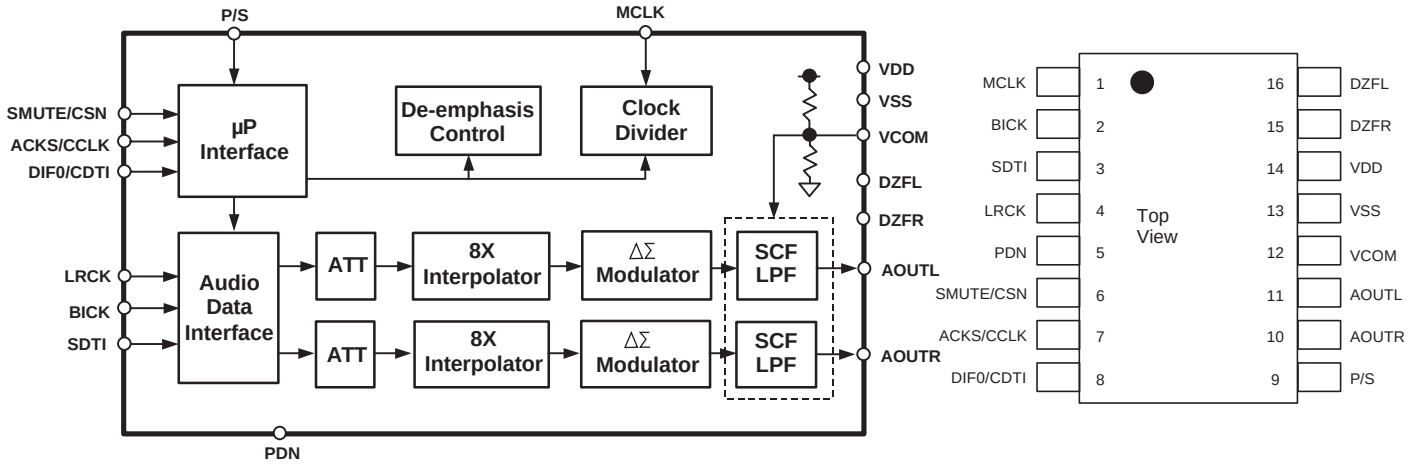
U26 NAVD-7847,Video circuit PC board



U9 NAAF-7830,
Driver circuit
PC board

IC BLOCK DIAGRAMS AND DESCRIPTIONS

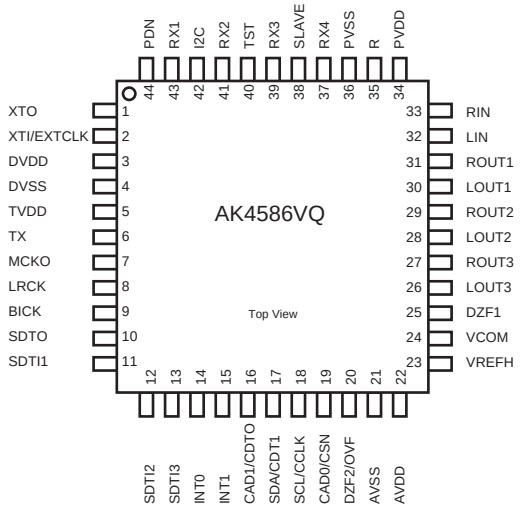
AK4384(106dB 192kHz 24-Bit 2ch DAC)



No.	Pin Name	I/O	Function
1	MCLK	I	Master Clock Input Pin An external TTL clock should be input on this pin.
2	BICK	I	Audio Serial Data Clock Pin
3	SDTI	I	Audio Serial Data Input Pin
4	LRCK	I	L/R Clock Pin
5	PDN	I	Power -Down Mode Pin When at "L", the AK4384 is in the power-down mode and is held in reset. The AK4384 should always be reset upon power-up.
6	SMUTE	I	Soft Mute Pin in parallel mode "H": Enable,"L": Disable
	CSN	I	Chip Select Pin in serial mode
7	ACKS	I	Auto Setting Mode Pin in parallel mode "L": Manual Setting Mode, "H": Auto Setting Mode
	CCLK	I	Control Data Clock Pin in serial mode
8	DIF0	I	Audio Data Interface Format Pin in parallel mode
	CDTI	I	Control Data Input Pin in serial mode
9	P/S	I	Parallel/Serial Select Pin (Internal pull-up pin) "L": Serial control mode,"H": Parallel control mode
10	AOUTR	O	Rch Analog Output Pin
11	AOUTL	O	Lch Analog Output Pin mFc
12	VCOM	O	Common Voltage Pin, VDD/2 Normally connected to VSS with a 0.1mF ceramic capacitor in parallel with a 10mF electrolytic cap.
13	VSS	-	Ground Pin
14	VDD	-	Power Supply Pin
15	DZFR	O	Rch Data Zero Input Detect Pin
16	DZFL	O	Lch Data Zero Input Detect Pin

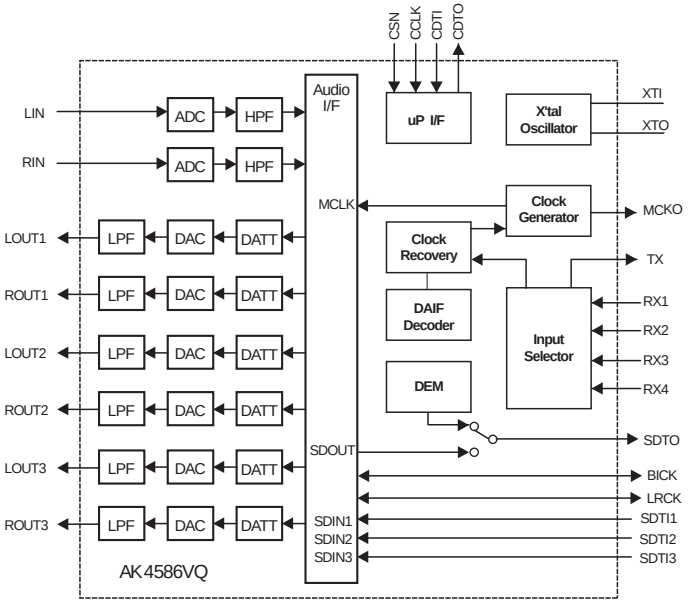
IC BLOCK DIAGRAMS AND DESCRIPTIONS

AK4586VQ(96kHz 6ch CODEC)



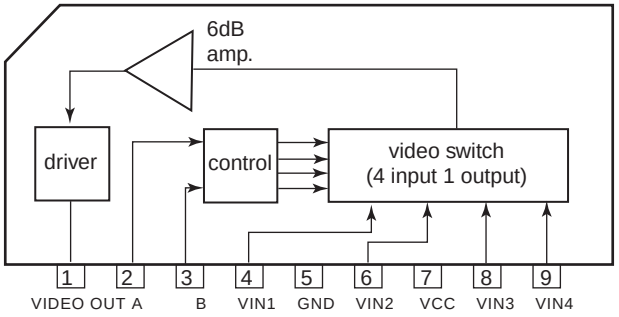
Pin Layout

No.	Name	I/O	Description
1	XTO	O	Crystal oscillator output pin
2	XTI	I	Crystal oscillator input pin
	EXTCLK	I	Master clock input pin
3	TVDD	-	Power supply pin for output buffer. 2.7V to 5.5V
4	DVSS	-	Digital ground pin
5	DVDD	-	Power supply pin for digital section. 4.5V to 5.5V
6	TX	O	Transmitter channel output pin
7	MCKO	O	Master clock output pin
8	LRCK	I/O	Input/Output channel clock pin
9	BICK	I/O	Audio serial data clock pin
10	SDTO	O	Audio serial data output pin
11	SDTI1	I	Audio serial data input pin for DAC1
12	SDTI2	I	Audio serial data input pin for DAC2
13	SDTI3	I	Audio serial data input pin for DAC3
14	INT0	O	Interrupter pin 0
15	INT1	O	Interrupter pin 1
16	CDTO	O	Control data output pin (Serial mode)
	CADI	I	Chip address pin 1 (Bus mode)
17	CDTI	I	Control data input pin (Serial mode)
	SDA	I/O	Control data input/output pin (Bus mode)
18	CCLK	I	Control data clock pin (Serial mode)
	SCL	I	Control data clock pin (Bus mode)
19	CSN	I	Chip select pin (Serial mode)
	CAD0	I	Chip address pin 0 (Bus mode)
20	DZF2	O	Zero input detection pin 2
	OVF	O	Overflow detection pin for analog input
21	AVSS	-	Analog ground pin
22	AVDD	-	Power supply pin for analog section. 4.5V to 5.5V
23	VREFH	I	Reference voltage input pin, AVDD
24	VCOM	O	Common voltage output pin, AVDD/2
25	DZF1	O	Zero input detection pin 1
26	LOUT3	O	DAC 3 left channel analog output pin
27	ROUT3	O	DAC 3 right channel analog output pin
28	LOUT2	O	DAC 2 left channel analog output pin
29	ROUT2	O	DAC 2 right channel analog output pin
30	LOUT1	O	DAC 1 left channel analog output pin
31	ROUT1	O	DAC 1 right channel analog output pin
32	LIN	I	Left channel analog input pin
33	RIN	I	Right channel analog input pin
34	PVDD	-	PLL power supply pin. 4.5V to 5.5V
35	R	-	External resistor connection pin
36	PVSS	-	PLL ground pin
37	RX4	I	Receiver channel input pin 4
38	SLAVE	I	Slave mode pin
39	RX3	I	Receiver channel input pin 3
40	TST	I	Test pin
41	RX2	I	Receiver channel input pin 2
42	I2C	I	Serial control mode select pin. Serial at H.
43	RX1	I	Receiver channel input pin 1
44	PDN	I	Power down and reset pin



Block diagram

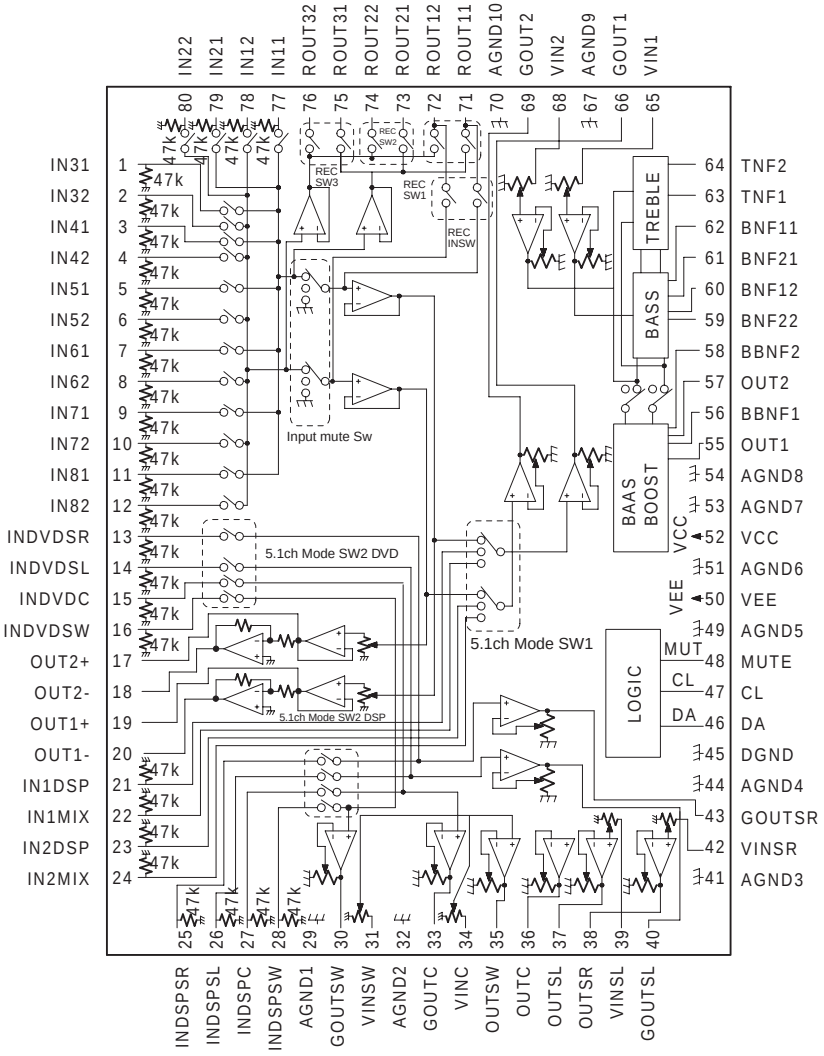
LA7956(Video Switch)



S2 (2 pin)	S3 (3 pin)	VIN1 (4 pin)	VIN2 (6 pin)	VIN3 (8 pin)	VIN4 (9 pin)
H	H	ON	OFF	OFF	OFF
L	H	OFF	ON	OFF	OFF
H	L	OFF	OFF	ON	OFF
L	L	OFF	OFF	OFF	ON

IC BLOCK DIAGRAMS AND DESCRIPTIONS

BD3811K1(6ch Volume with 8ch input selector)

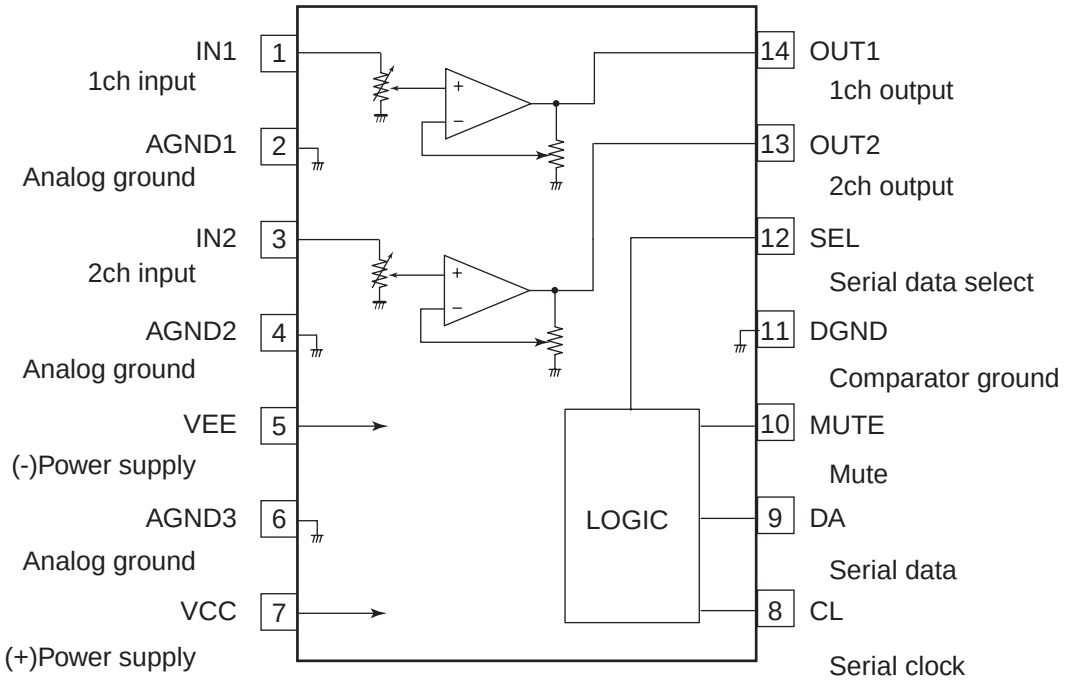


No.	Terminal	Description
1	IN31	1ch input terminal 3
2	IN32	2ch input terminal 3
3	IN41	1ch input terminal 4
4	IN42	2ch input terminal 4
5	IN51	1ch input terminal 5
6	IN52	2ch input terminal 5
7	IN61	1ch input terminal 6
8	IN62	2ch input terminal 6
9	IN71	1ch input terminal 7
10	IN72	2ch input terminal 7
11	IN81	1ch input terminal 8
12	IN82	2ch input terminal 8
13	INDVDSR	DVD surround Rch input terminal
14	INDVDSL	DVD surround Lch input terminal
15	INDVDC	DVD center input terminal
16	INDVDSW	DVD sub woofer input terminal
17	OUT2(+)	2ch (+) A/D output terminal
18	OUT2(-)	2ch (-) A/D output terminal
19	OUT1(+)	1ch (+) A/D output terminal
20	OUT1(-)	1ch (-) A/D output terminal
21	IN1DSP	1ch DSP input terminal
22	IN1MIX	1ch DSP MIX input terminal
23	IN2DSP	2ch DSP input terminal
24	IN2MIX	2ch DSP MIX input terminal
25	INDSPSR	DSP surround Rch input terminal

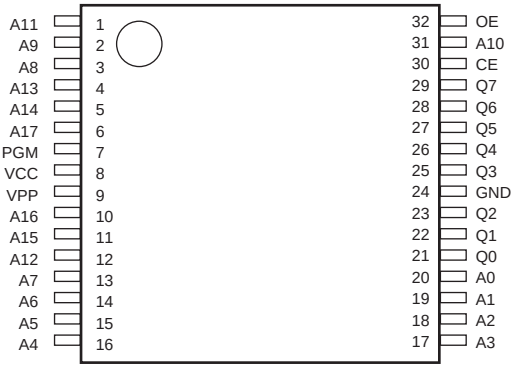
No.	Terminal	Description
26	INDSPSL	DSP surround Lch input terminal
27	INDSPC	DSP center input terminal
28	INDSPSW	DSP sub woofer input terminal
29	AGND1	Analog ground terminal
30	GOUTSW	Sub woofer input gain output terminal
31	VINSW	Sub woofer volume input terminal
32	AGND2	Analog ground terminal
33	GOUTC	Center input gain out put terminal
34	VINC	Center volume input terminal
35	OUTSW	Sub woofer output terminal
36	OUTC	Center output terminal
37	OUTSL	Surround Lch output terminal
38	OUTSR	Surround Rch output terminal
39	VINSL	Surround Lch volume input terminal
40	GOUTSL	Surround Lch input gain output terminal
41	AGND3	Analog ground terminal
42	VINSR	Surround Rch volume input terminal
43	GOUTSR	Surround Rch input gain output terminal
44	AGND4	Analog ground terminal
45	DGND	Ground terminal for comparator
46	DA	Serial data and latch input terminal
47	CL	Serial clock input terminal
48	MUTE	Mute terminal
49	AGND5	Analog ground terminal
50	VEE	(-) Power supply terminal
51	AGND6	Analog ground terminal
52	VCC	(+) Power supply terminal
53	AGND7	Analog ground terminal
54	AGND8	Analog ground terminal
55	OUT1	1ch output terminal
56	BBNF1	1ch bass boost filter terminal
57	OUT2	2ch output terminal
58	BBNF2	2ch bass boost filter terminal
59	BNF22	2ch bass filter terminal 2
60	BNF12	2ch bass filter terminal 1
61	BNF21	1ch bass filter terminal 2
62	BNF11	1ch bass filter terminal 1
63	TNF1	1ch treble filter terminal 1
64	TNF2	2ch treble filter terminal 1
65	VIN1	1ch(Lch) volume input terminal
66	GOUT1	1ch(Lch) input gain output terminal
67	AGND9	Analog ground terminal
68	VIN2	2ch(Rch) volume input terminal
69	GOUT2	2ch(Rch) input gain output terminal
70	AGND10	Analog ground terminal
71	ROUT11	1ch recording input/output terminal 1
72	ROUT12	2ch recording input/output terminal 1
73	ROUT21	1ch recording output terminal 2
74	ROUT22	2ch recording output terminal 2
75	ROUT31	1ch recording output terminal 3
76	ROUT32	2ch recording output terminal 3
77	IN11	1ch input terminal 1
78	IN12	2ch input terminal 1
79	IN21	1ch input terminal 2
80	IN22	2ch input terminal 2

IC BLOCK DIAGRAMS AND DESCRIPTIONS

BD3812F(Audio Sound Processor)

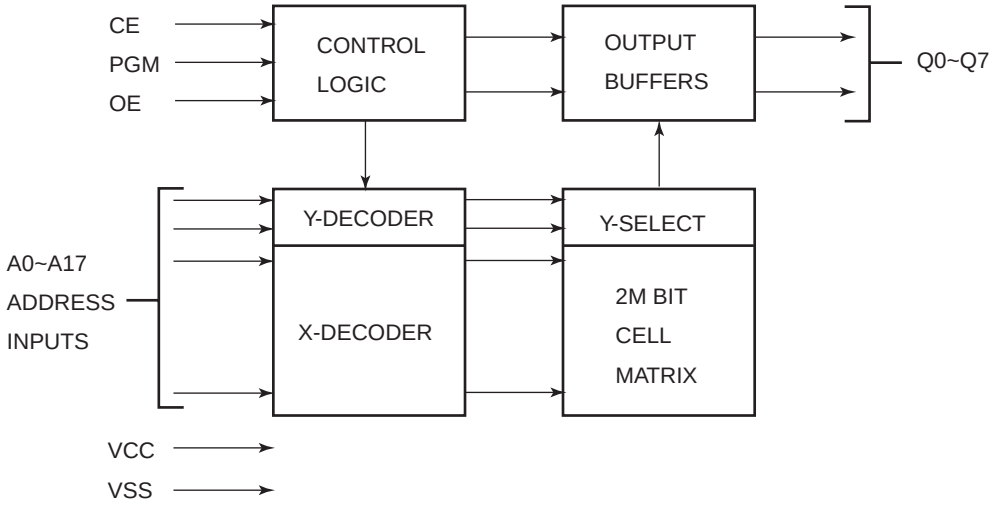


MX27L2000TC-12(2M-Bit CMOS EPROM)



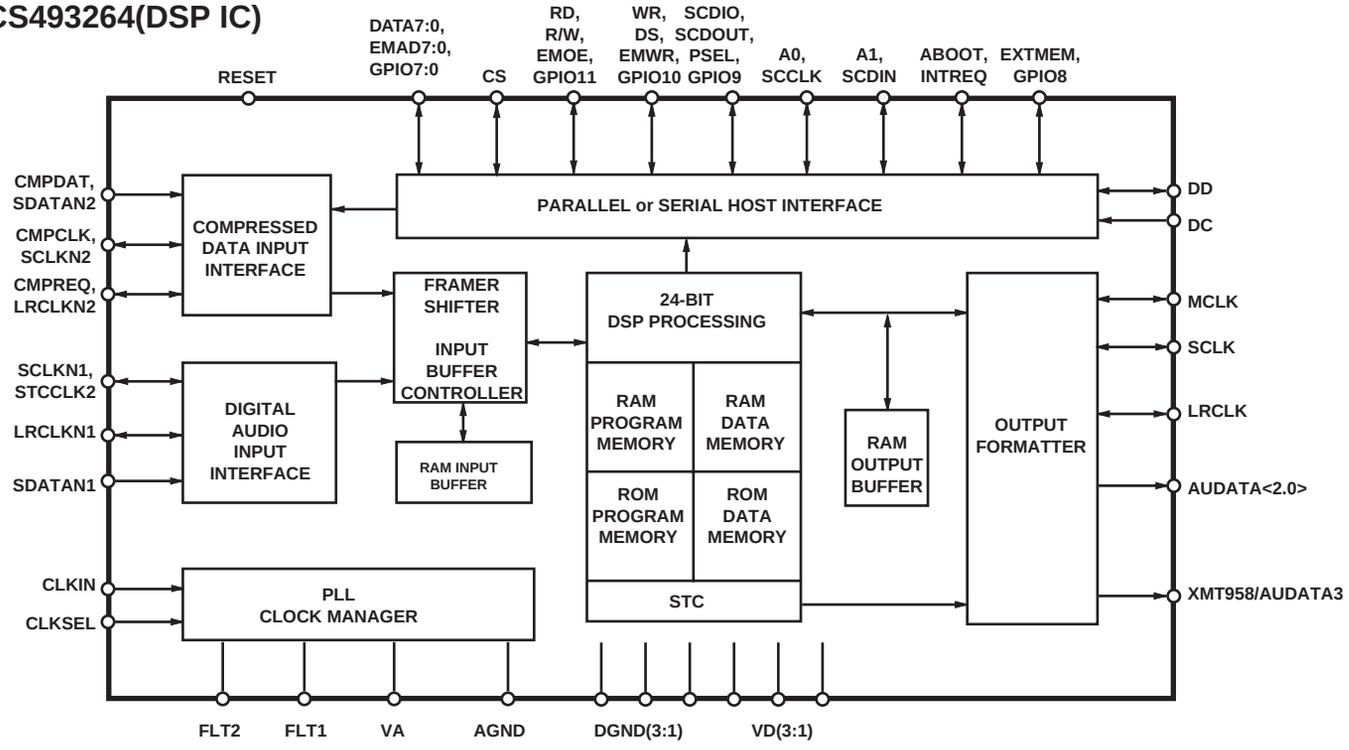
PIN DESCRIPTION

SYMBOL	PIN NAME
A0~A17	Address Input
Q0~Q7	Data Input/Output
CE	Chip Enable Input
OE	Output Enable Input
PGM	Programmable Enable Input
VPP	Program Supply Voltage
NC	No Internal Connection
VCC	Power Supply Pin (+5V)
GND	Ground Pin

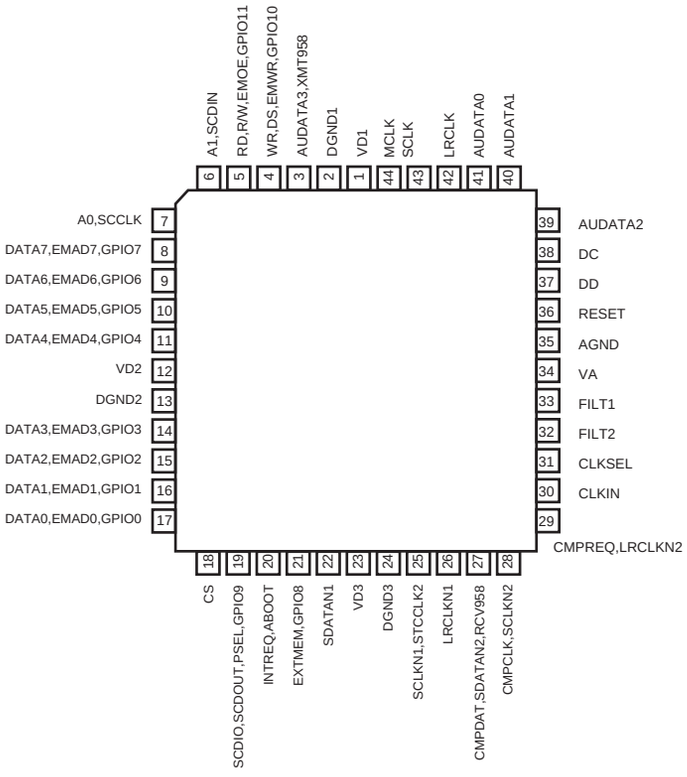


IC BLOCK DIAGRAMS AND DESCRIPTIONS

CS493264(DSP IC)

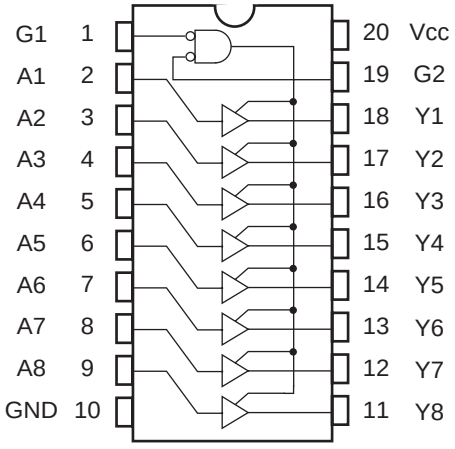


No.	Symbol	Description
1	VD1	Digital positive supply
2	DGMD1	Digital supply ground
3	AUDATA3,XMT958	SPDIF transmitter output. Digital audio output.
4	WR,DS,EMWR,GPIO10	Host write strobe or host data strobe or external memory write enable or general purpose input & output number 10.
5	RD,R/W,EMOE,GPIO11	Host parallel output enable or host parallel R/W or external memory output enable or general purpose input & output number 11.
6	A1,SCDIN	Host address bit one or SPI serial control data input.
7	A0,SCCLK	Host parallel address bit zero or serial control port clock.
8	DATA7	In parallel host mode these pins provide a bi-directional data bus. If a serial host mode is selected, these pins can provide a multiplexed address and data bus for connecting an 8-bit external memory. Otherwise, in serial data host mode, these pins can act as general-purpose input or output pins that can be individually configured by this DSP.
9	DATA6	
10	DATA5	
11	DATA4	
12	VD2	Digital positive supply
13	DGND2	Digital supply ground
14	DATA3	In parallel host mode these pins provide a bi-directional data bus. If a serial host mode is selected, these pins can provide a multiplexed address and data bus for connecting an 8-bit external memory. Otherwise, in serial data host mode, these pins can act as general-purpose input or output pins that can be individually configured by this DSP.
15	DATA2	
16	DATA1	
17	DATA0	
18	CS	Host parallel chip select, host serial SPI chip select pin.
19	SCDIO,SCDOUT,PSEL ,GPIO8	Serial control port data input and output, parallel port type select pin.
20	INREQ,ABOOT	Control port interrupt request, automatic boot enable
21	EXTMEM,	External memory chip select or general purpose input & output number pin
22	SDATAN1	PCM audio data input number one
23	VD3	Digital positive supply
24	DGND3	Digital supply ground
25	SCLK1,STCLK2	PCM audio data input bit clock
26	LRCLKN1	PCM audio input sample rate clock
27	CMPDAT,ECV958	PCM audio data input number two.
	SDATAN2	
28	CMPCLK,	PCM audio input bit clock
	SCLKN2	
29	CMPREQ	PCM audio input sample rate clock
	LRCLKN2	
30	CLKIN	Master clock input pin
31	CLKSEL	DSP clock select pin
32	FILT2	Connect to an external filter for phase-locked loop.
33	FILT1	Connect to an external filter for phase-locked loop.
34	VA	Analog positive supply.
35	AGND	Analog supply ground/
36	RESET	Master reset input
37	DD	These pins are reserved and should be pulled up with an external 4.7k resistors.
38	DC	
39	AUDATA2	Digital audio output 2.
40	AUDATA1	Digital audio output 1.
41	AUDATA0	Digital audio output 0.
42	LRCLK	Audio output sample rate clock
43	SCLK	audio output bit clock
44	MCLK	Audio master clock



IC BLOCK DIAGRAMS AND DESCRIPTIONS

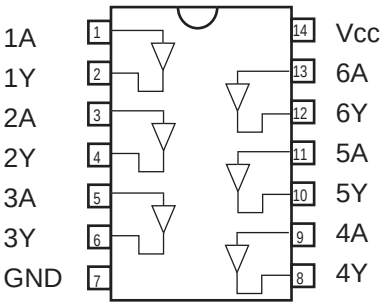
TC74VHC541FT(Octal bus buffer)



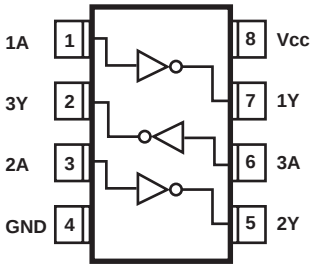
INPUTS			OUTPUT
$\overline{G1}$	$\overline{G2}$	An	
H	X	X	Z
X	H	X	Z
L	L	H	H
L	L	L	L

X :Don't care
Z :High impedance

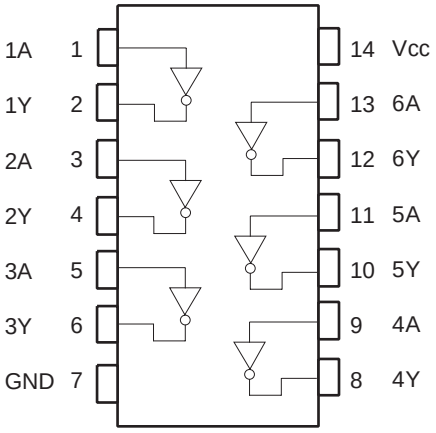
TC7HTC7007AF(Hex buffer)



TC7WU04FU(Triple inverter)



74HCU04F(Hex Inverter)

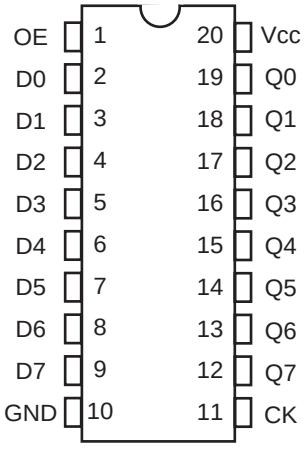


(TOP VIEW)

Truth table

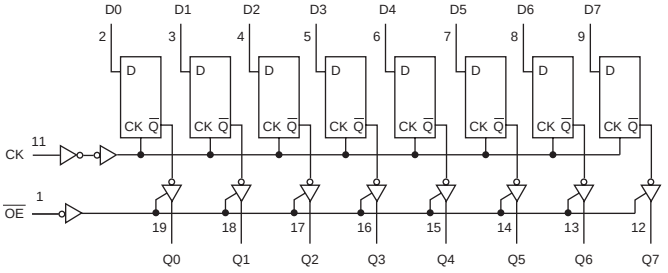
A	Y
L	H
H	L

TC74VHC574FT(Octal D-FF with 3-state output)

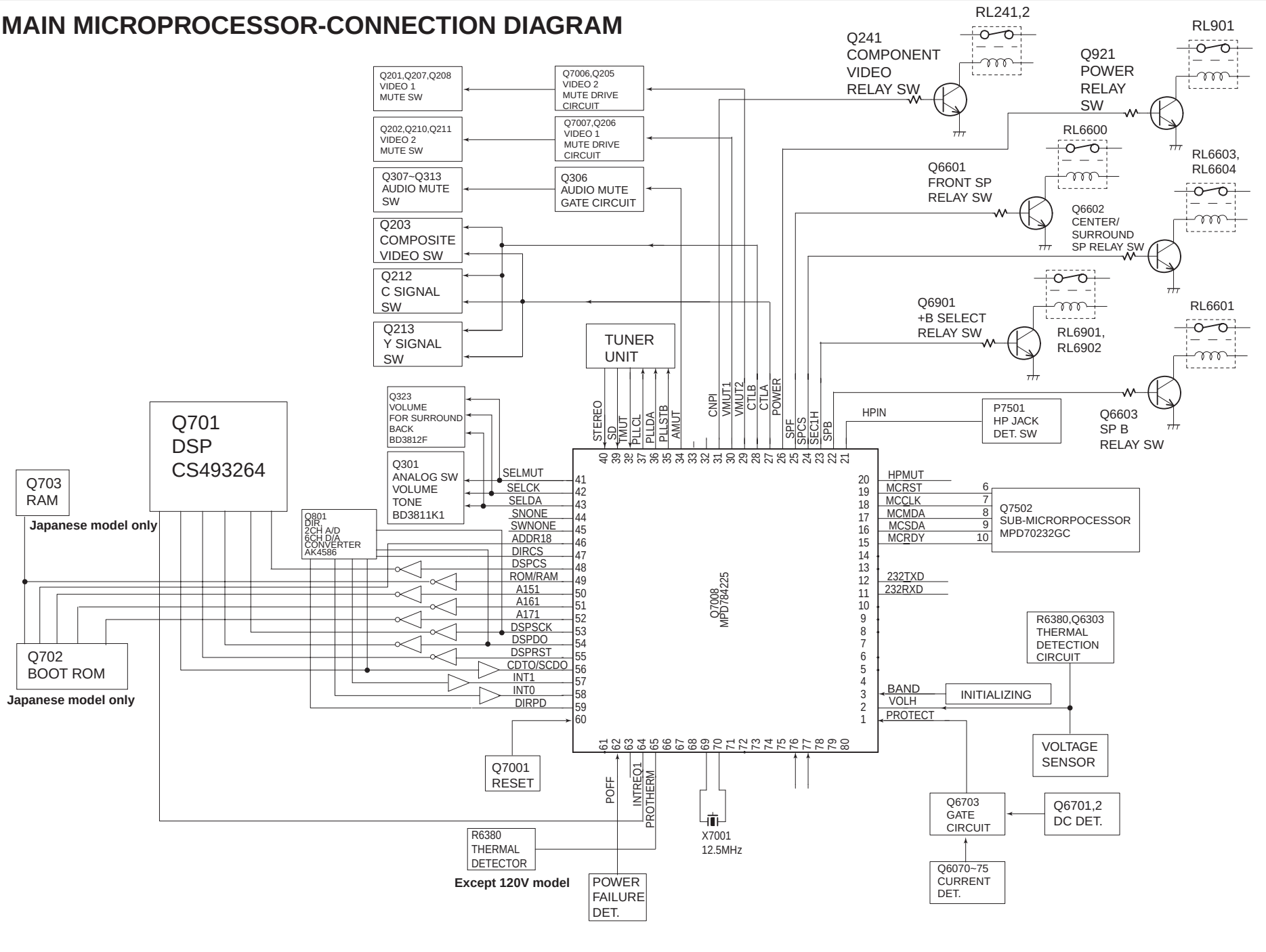


INPUTS			OUTPUT
$\overline{OE}$	CK	D	
H	X	X	Z
L	↓	X	Qn
L	↑	L	L
L	↑	H	H

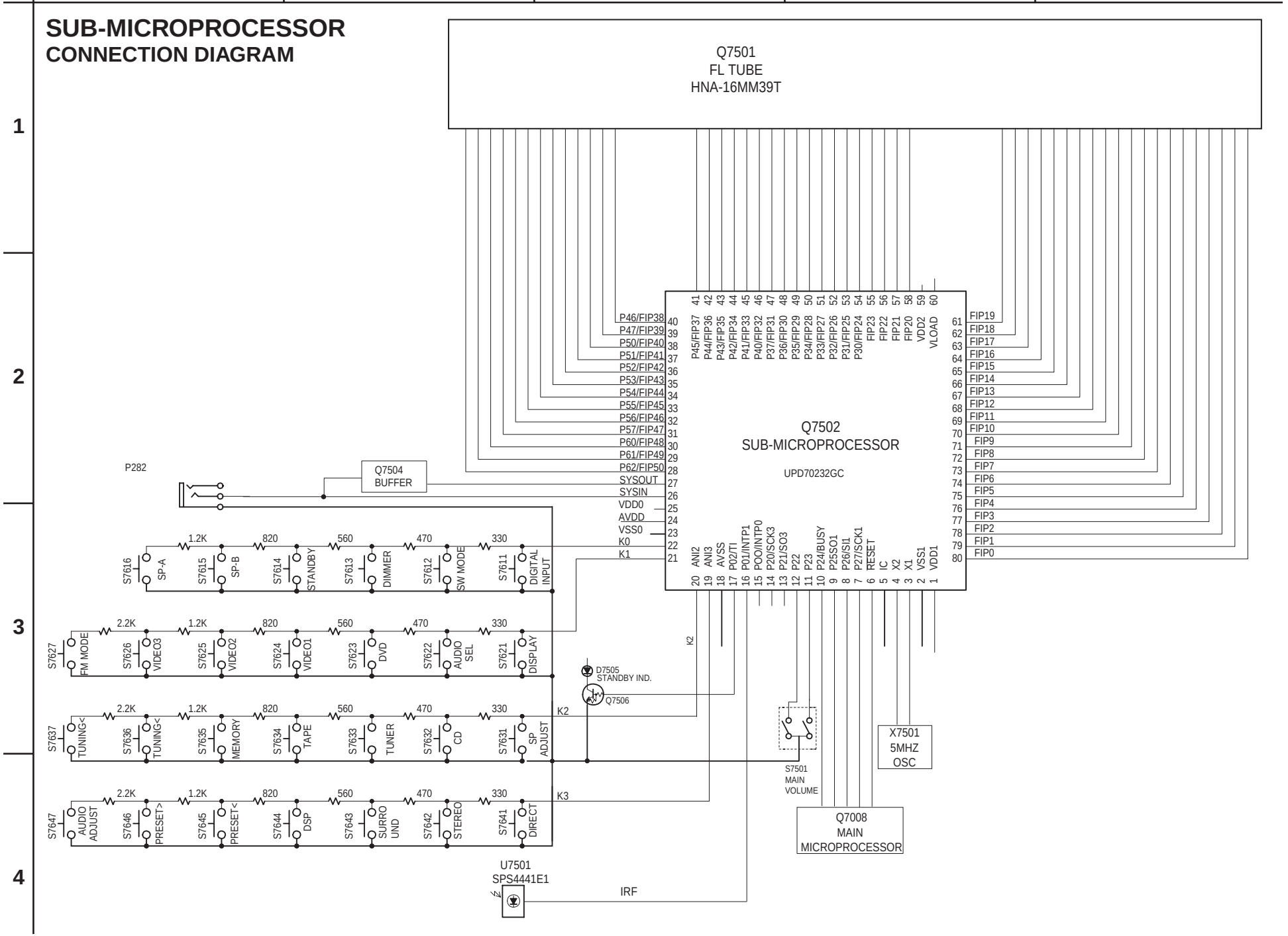
X :Don't care
Z :High impedance
Qn :No change



MAIN MICROPROCESSOR-CONNECTION DIAGRAM



SUB-MICROPROCESSOR
CONNECTION DIAGRAM



TERMINAL DESCRIPTION

MAIN MICROPROCESSOR

No.	Terminal	I/O	Description
1	PROTECT	I	Protection circuit detection input terminal
2	VOLH	I	Power amplifier voltage detection terminal.
3	BAND	I	Region setting input terminal.
11	232TXD		Not used.
15	MCRDY	I	Data ready detection input terminal from the sub microprocessor.
16	MCSDa	I	Data input terminal from the sub microprocessor.
17	MCMDA	O	Data output terminal to the sub microprocessor.
18	MCCLK	O	Serial clock output terminal to the sub microprocessor
19	~MCRST	O	Reset signal output terminal to the sub microprocessor
20	HPMUT	O	Muting control output terminal for headphone amplifier.
21	HPIN	I	Input terminal to detect the connection of headphone
22	SPBRL	O	Speaker B relay control output terminal.
23	SEC1H	O	Voltage +/-B control output terminal.
24	SPACSRL	O	Speaker relay control output terminal for center and surround channels
25	SPAFRL	O	Speaker relay A control output terminal for front channels
26	POWERRL	O	Power source relay control output terminal
27	VCTRLA	O	Control signal A output terminal for the video selector switch
28	VCTRLB	O	Control signal B output terminal for the video selector switch
29	VMUT2	O	Muting control output terminal for the video section 2
30	VMUT1	O	Muting control output terminal for the video section 1
31	CNPI	O	Componet video relay control output
34	AMUT	O	Audio muting control output terminal
35	PLLSTB	O	Strobe signal output terminal to PLL IC
36	PLLSDO	O	Serial data output terminal to PLL IC
37	PLLCLK	O	Serial clock output terminal to PLL IC
38	TUMUT	O	Muting control output terminal for the tuner section
39	~SD	I	Broadcast detection input terminal more than a muting level.
40	~STEREO	I	FM stereo broadcast detection input terminal
41	SELMUT	O	Muting control output terminal for selector, volume and tone IC BD3811.
42	SELCLK	O	Serial clock output terminal of IC BD3811.
43	SELSDO	O	Serial data and latch signal output terminal for IC BD3811
44	SNONE	O	Not used.
45	SWNONE	O	Not used.
46	ADDR181	O	DSP boot ROM address 18 select terminal. Not used.
47	~DIRCS	O	Chip select signal output terminal to DIR IC AK4586
48	~DSPCS	O	Chip select signal output terminal to DSP IC.
49	~ROM/RAM	O	ROM/RAM select terminal. Not used.
50	ADDR151	O	DSP boot ROM address 15 select terminal. Not used.
51	ADDR161	O	DSP boot ROM address 16 select terminal.Not used.
52	ADDR171	O	DSP boot ROM address 17 select terminal.Not used.
53	DSPCLK	O	Serial clock output terminal for DIR and DSP ICs.
54	DSPSDO	O	Serial data output terminal for DIR and DSP ICs.
55	~DSPRST	O	Reset signal output terminal to DSP IC.
56	CDTO/SCDO	I	Serial data input terminal from DIR and DSP ICs.
57	INT1	I	Input terminal to detect the status of DIR IC.
58	INT0	I	Input terminal to detect the unlock of DIR IC.
59	~DIRPD	O	Power down terminal to DIR and CODEC ICs.
60	RESET	I	Reset input terminal
62	POFF	I	Power failure detection input terminal
64	~INTREQ	I/O	Interrupter input terminal from DSP IC.
65	PROTHERM	I	Theraml detector input
66	~RDSCLK	I	RDS clock input terminal (European model only)
69	X2		Connect the ceramic oscillator 12.5MHz.
70	X1		Connect the ceramic oscillator 12.5MHz.
71	TEST/VPP		Test terminal.
72,3	XT2,XT1		Not used.
76	RDSDATA	I	Data input terminal of RDS broadcast (European model only)
77	RDSSIG	I	Input terminal to check the signal of RDS broadcast (European model only)

TERMINAL DESCRIPTION

SUB MICROPROCESSOR

Pin No.	Symbol	I/O	Description	Pin No.	Symbol	I/O	Description
1	VDD		Power supply terminal. Connect to 5V.	41	P22	O	Segment output terminal of P22.
2	VSS		Ground terminal.	42	P21	O	Segment output terminal of P21.
3	X1		Ceramic oscillator connection terminals for main system.	43	P20	O	Segment output terminal of P20.
4	X2		Connect the 5MHz ceramic oscillator between #3 and #4.	44	P19	O	Segment output terminal of P19.
5	IC/VPP		Internal connection terminal	45	P18	O	Segment output terminal of P18.
6	~RESET	I	System reset signal input terminal.	46	P17	O	Segment output terminal of P17.
7	SUBCL/SCK	I	Clock input terminal to transmit the signal from main microprocessor.	47	P16	O	Segment output terminal of P16.
8	SUBDO/SDI	I	Data input terminal to transmit the signal from main microprocessor.	48	P15	O	Segment output terminal of P15.
9	SUBDI/SDD	O	Data output terminal to transmit the signal to main microprocessor.	49	P14	O	Segment output terminal of P14.
10	SUBLDY	O	Data ready output terminal to transmit to the main microprocessor.	50	P13	O	Segment output terminal of P13.
11	VBJ	I	Pulse input terminal from the rotary encoder of volume.	51	P12	O	Segment output terminal of P12.
12	VAJ	I	Pulse input terminal from the rotary encoder of volume.	52	P11	O	Segment output terminal of P11.
13	SSCBJ	I	Not used.	53	P10	O	Segment output terminal of P10.
14	SSCAJ	I	Not used.	54	P9	O	Segment output terminal of P9.
15	~IRIN	I	Not used.	55	P8	O	Segment output terminal of P8.
16	~IRF	I	Signal input terminal from the remote controller.	56	P7	O	Segment output terminal of P7.
17	STBYLED	O	Standby LED control output terminal.	57	P6	O	Segment output terminal of P6.
18	AVSS		Ground terminal for A/D converter.	58	P5	O	Segment output terminal of P5.
19	K3	I	Operation key connection terminal.	59	VDD2		Power supply terminal. Apply +5V.
20	K2	I	Operation key connection terminal.	60	VLOAD		Negative power supply terminal of FL controller.
21	K1	I	Operation key connection terminal.	61	P4	O	Segment output terminal of P4.
22	K0	I	Operation key connection terminal.	62	P3	O	Segment output terminal of P3.
23	VSS0		Ground terminal	63	P2	O	Segment output terminal of P2.
24	AVDD		Power supply terminal for A/D converter.	64	P1	O	Segment output terminal of P1.
25	VDDD		Power supply terminal. Apply +5V.	65	16G	O	Grid output terminal of 16G.
26	~SYSIN	I	System code input terminal.	66	15G	O	Grid output terminal of 15G.
27	~SYSOUT	O	System code output terminal.	67	14G	O	Grid output terminal of 14G.
28	P35	O	Segment output terminal of P35.	68	13G	O	Grid output terminal of 13G.
29	P34	O	Segment output terminal of P34.	69	12G	O	Grid output terminal of 12G.
30	P33	O	Segment output terminal of P33.	70	11G	O	Grid output terminal of 11G.
31	P32	O	Segment output terminal of P32.	71	10G	O	Grid output terminal of 10G.
32	P31	O	Segment output terminal of P31.	72	9G	O	Grid output terminal of 9G.
33	P30	O	Segment output terminal of P30.	73	8G	O	Grid output terminal of 8G.
34	P29	O	Segment output terminal of P29.	74	7G	O	Grid output terminal of 7G.
35	P28	O	Segment output terminal of P28.	75	6G	O	Grid output terminal of 6G.
36	P27	O	Segment output terminal of P27.	76	5G	O	Grid output terminal of 5G.
37	P26	O	Segment output terminal of P26.	77	4G	O	Grid output terminal of 4G.
38	P25	O	Segment output terminal of P25.	78	3G	O	Grid output terminal of 3G.
39	P24	O	Segment output terminal of P24.	79	2G	O	Grid output terminal of 2G.
40	P23	O	Segment output terminal of P23.	80	1G	O	Grid output terminal of 1G.

HT-R510

REF. NO.	PART NO.		DESCRIPTION
1	27111268		Front bracket
2	838130088		3TTB+8B,Self-tapping screw
5	27100416A		Chassis
6	27190503A		KGLS-8RT,Holder
7	27190813		KGPS-10RF,Holder
8	27190428A		KGLS-10RT,Holder
9	830440089		4TTC+8C(BC),Self-tapping screw
10	880009		NRP-345,Plastic rivet
11	27300750	!	Cord, bushing
12	27160527		Heatsink
13	801606		3SMH10W.SW+15B(CU),Special screw
16	28184831		Top cover
17	838430088		3TTB+8B(BC),Self-tapping screw
18	29363194		Label,hookup
21	27175319B		Leg
22	28141494		Cushion
23	838130088		3TTB+8B,Self-tapping screw
24	28325641		Knob volume
25	28191957		Clear plate
31	27123075A		Rear panel
33	838430088		3TTB+8B(BC),Self-tapping screw
51	27212502		Front panel
52	28135244		Badge
53	838430088		3TTB+8B(BC),Self-tapping screw
54	29110083		Tape, cloth
55	223024		AC238,Isolated sheet
56	260208		Wire tie
61	29363378		Label POP
62	29363377		Label C
71	29092044		Pad
72	29100034-1A		850*650,Polybag
73	29110149		Tape, cellophane
74	29110148		PP tape
75	29100201		350*200*W250,Polybag
76	29054020		Carton box
77	29363326		Label UPC
81	29363059A		Label,cable
83	29343479		Instruction manual E
86	29343480		Instruction manual, digest
87	24140518		RC-518M,Remote controller
88	3010054		R6/AA(UM-3),Two batteries
89	232140		NMA-3057,AM loop antenna
90	292191		FM antenna
93	29365090A		Warranty card
F6901,F6902	252198 or	!	8A-UL or
	252261	!	8A-T/UL-ST2,Fuse
F901	252198 or	!	8A-UL or
	252261	!	8A-T/UL-ST2,Fuse
P101	2047151512		NCFC7-151512,Flexible cable
P7502	2045102012		NCFC5-102012,Flexible cable
P7503	2047081012		NCFC7-081012,Flexible cable
P901	253332HIT or	!	AS-UC-2 or

	253333VOL	!	AS-UC-2,Power supply cord
Q6050~Q6055	2203563,	*	KTC5242-O,
	2203562,	*	KTC5242-R,
	2203664,	*	MN130S-Y,
	2203666,	*	MN130S-P,
	2203663,	*	MN130S-O,
	2202843 or	*	2SC5242-O or
	2202842	*	2SC5242-R
Q6060~Q6065	2203553,	*	KTA1962-O,
	2203552,	*	KTA1962-R,
	2203674,	*	MP130S-Y,
	2203676,	*	MP130S-P,
	2203673,	*	MP130S-O,
	2202833 or	*	2SA1962-O or
	2202832	*	2SA1962-R
T901	2301682	*	NPT-1465D,Power transformer
U1	1A970521-1F		NADG-7821-1F,DSP circuit PC board ass'y
U3	1A970503-2C		NADIS-7403-2C,Display circuit PC board ass'y
U4	1A970504-2C		NASW-7404-2C,Standby switch PC board ass'y
U5	1A970505-2C		NAETC-7405-2C,Headphone terminal PC board ass'y
U6	1A970506-2C		NAETC-7406-2C,Front video PC board ass'y
U9	1A970530-1D		NAAF-7830-1D,Driver circuit PC board ass'y
U10	1A970531-1D		NAVD-7831-1D,Component video PC board ass'y
U12	1A970533-1D		NAETC-7833-1D,Const. Voltage circuit PC board ass'y
U13	1A970534-1D		NAPS-7834-1D,Secondary circuit PC board ass'y
U14	1A970535-1D		NAETC-7835-1D,Speaker terminal PC board ass'y
U15	1A970536-1D		NAETC-7836-1D,Ground terminal PC board ass'y
U17	1A970538-1D		NAETC-7838-1D,Connector PC board ass'y
U21	1A970542-1H		NAAF-7842-1H,Power amplifier PC board ass'y
U23	1A970544-1H		NAPS-7844-1H,Transformer terminal PC board ass'y
U24	1A970545-1H		NAPS-7845-1H,Primary circuit PC board ass'y
U25	1A970546-1H		NAPS-7846-1H,Secondary terminal PC board ass'y
U26	1A970547-1H		NAVD-7847-1H,Video circuit PC board ass'y
U28	1A970549-1H		NAETC-7849-1H,Thermal det. PC board ass'y
U27	1A970548-1H		NAETC-7848-1H,PC board for holder
U31	240146,		FAE385-A02F,
	240134A or		TFCE1U114B or
	240138A		ENG06501QR,Tuner unit

Display circuit PC board (NADIS-7403-2C)

CIRCUIT NO.	PART NO.	DESCRIPTION
	FL tube	
Q7501	212229	HNA-16MM39T
	Sensor	
U7501	241341	SPS-444-1-E1,Remote control
	IC	
Q7502	22241571R3	MPD780232GC-030-8BT
	Transistors	
Q7503	2216175R2 or 2213145R2	KTC3875-GR or 2SC2712-GR
Q7504	2216230R2 or 2214540R2	KRA103S or RN2403
Q7506	2216190R2 or 2214470R2	KRC102S or RN1402
	Diodes	
D7501	224550820R2, 224490820R2 or 224660824R2	UDZS8.2B, UDZ8.2B or HZU8.2B,Zener
D7502	224550510R2, 224490510R2 or 224660514R2	UDZS5.1B, UDZ5.1B or HZU5.1B,Zener
D7503,D7507	223269R2 or 223234R2	1SS355 or 1SS352
D7505	225290	SEL4110R,LED
	Choke coils	
L7504,L7505	231237K220R2	NCH-1477
	Oscillator	
X7501	3010242	CST5.00MGW,Ceramic
	Capacitors	
C7502	355783309	CE04W50V-33M,Elect.
C7514	394621017 or 394721017	CE04W6.3V-100M(VR) or CE04W6.3V100M(SC),Elect.
C7521	355722219	CE04W6.3V-220M,Elect.
	Rotary encoder	
S7501	25065627	EC12E2425
	Push switches	
S7611~S7613 S7621~S7627 S7631~S7637	25035718, 25035699 or 25035714	NPS-111-S681, NPS-111-S662 or NPS-111-S677
S7641~S7647	25035718, 25035699 or 25035714	NPS-111-S681, NPS-111-S662 or NPS-111-S677
	Sockets	
JL7501A	25051107	NSCT-3P894
JL7502A	25051109	NSCT-5P896
P7502A	25051892 or 25052477	NSCT-10P1679 or NSCT-10P2374
P7503A	25052054 or 25051852	NSCT-8P1841 or NSCT-8P1639
	Holder	
Q7501A	27190989A	(FL)

Standby switch PC board (NASW-7404-2C)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Push switches	
S7614~S7616	25035718, 25035699 or 25035714	NPS-111-S681, NPS-111-S662 or NPS-111-S677
	Socket	
JL7501B	25051107	NSCT-3P894

Headphone terminal PC board (NAETC-7405-2C)

CIRCUIT NO.	PART NO.	DESCRIPTION
P7501	25045724	YKB21-5005,Headphone
JL7502B	25051109	NSCT-5P896,Socket

Front video PC board (NAETC-7406-2C)

CIRCUIT NO.	PART NO.	DESCRIPTION
P251	25045680	NPJ-7PDB477,Terminal
P253B	2009990578UL	NSAS-10P0787,Socket
P261B	2009990513UL	NSAS-6P0675,Socket

DSP circuit PC board (NADG-7821-1F)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q301	22241761R3	BD3811K1
Q302,Q305	22241383R2, 22240489R1NE or 22240581R2	NJM4565M-D, MPC4570G2-T1(MST) or NJM4565M
Q321	222780073R2	78L07(SMT)
Q322	222790073R2	79L07(SMT)
Q323	22241785R2	BD3812F
Q6402,Q6405	222780125	78M12HF
Q6403	222790125	79M12HF
Q6406	222780055	78M05HF
Q7002	22274541ER2TO c 22274541IR2TI	TC74VHC541FT or SN74AHC541PWR
Q7003	222740077R2TO	TC74HCT7007AF
Q7004	22241778R2	BA33C25FP
Q7008	22241970R3, 22241968R3 or 22241969R3	MPD784225GC-222-8BT, MPD784225GC-220-8BT or MPD784225GC-221-8BT
Q701	22241788R2	CS493292-CLR(6.1ch)
Q702	22241795R3	MX27L2000(TX-SR600)
Q704,Q705	22274574ER2TO c 22274574IR2TI	TC74VHC574FT or SN74AHC574PWR
Q707	22240935R2	TC7WU04FU
Q801	22241620R3	AK4586
Q802~Q804	22241383R2, 22240489R1NE or 22240581R2	NJM4565M-D, MPC4570G2-T1(MST) or NJM4565M
Q805	22241929R2	AK4384
	Transistors	
Q306	2214530R2 or 2216220R2	RN2402 or KRA102S

Q307,Q308	2215410R2	RN1441
Q312,Q313	2215410R2	RN1441
Q7001	2214490R2 or 2216210R2	RN1404 or KRC104S
Q7006,Q7007	2214490R2 or 2216210R2	RN1404 or KRC104S
Q9501	2211455	2SA1015-GR
	Diodes	
D7001~D7004	223234R2 or	1SS352 or
D801,D802	223269R2	1SS355
D7702	224660624R2, 224490620R2 or 224550620R2	HZU6.2B, UDZ6.2B or UDZS6.2B,Zener
D9502~D9507 D9509~D9512	22380260, 22380032 or 22380035	RL1N4003, 1SR139-100 or GP104003E
D9508	224662704R2, 224492700R2 or 224552700R2	HZU27B, UDZ27B or UDZS27B,Zener
	Choke coils	
L7001,L703	231237K470R2 or 233533K470R2	NCH-1479 or NCH-1587-470K
L7002,L701 L702,L704	231237M022R2 or 233533K022R2	NCH-1471 or NCH-1587-022K
L705,L706	230958R1	BK1608LM182-T
L801~L804 L806	231237M022R2 or 233533K022R2	NCH-1471 or NCH-1587-022K
L805	230958R1	BK1608LM182-T
	Oscillators	
X7001	3010361R2	CSTCE12M5G52-R0,Ceramic
X701	3010324R2	CSTCV12.2MTJ0C4,Ceramic
	Capacitors	
C101,C103	394780337 or 394680337	CE04W50V3.3M(SC) or CE04W50V-3.3M(VR),Elect.
C300,C301	374721015	ECQ-B50V-101K,Plastic film <HTR>
C329~C334	393341007	CE04W16V-10M(VX),Elect.
C335,C336	373043324R2	ECHU16V-332J,Chip film
C338,C340	373045634R2	ECHU16V-563J,Chip film
C347,C348	394741017 or 394641017	CE04W16V100M(SC) or CE04W16V-100M(VR),Elect.
C349	393341007	CE04W16V-10M(VX),Elect.
C353,C354	393344707	CE04W16V-47M(VX),Elect.
C358	393344707	CE04W16V-47M(VX),Elect.
C359,C362	394741007 or 394641007	CE04W16V10M(SC) or CE04W16V-10M(VR),Elect.
C363,C364	393341007	CE04W16V-10M(VX),Elect.
C6401	374721044	ECQ-B50V-104J,Plastic film
C6404,C6406 C6410,C6412	394741007 or 394641007	CE04W16V10M(SC) or CE04W16V-10M(VR),Elect.
C7001	3000078, 3000120 or 3000121	DX-5R5L104, FMC0H104Z or SCDA5R5104A,Super
C7002,C7005	394721017 or	CE04W6.3V100M(SC) or

	394621017	CE04W6.3V-100M(VR),Elect.
C7004	394780107 or	CE04W50V1.0M(SC) or
	394680107	CE04W50V-1M(VR),Elect.
C7011,C7012	394744707 or	CE04W16V47M(SC) or
C7015	394644707	CE04W16V-47M(VR),Elect.
C706,C716	394721017 or	CE04W6.3V100M(SC) or
	394621017	CE04W6.3V-100M(VR),Elect.
C801,C810	394744707 or	CE04W16V47M(SC) or
	394644707	CE04W16V-47M(VR),Elect.
C806	394724717 or	CE04W6.3V470M(SC) or
	394624717	CE04W6.3V-470M(VR),Elect.
C809,C820	394741007 or	CE04W16V10M(SC) or
	394641007	CE04W16V-10M(VR),Elect.
C810	394744707 or	CE04W16V47M(SC) or
	394644707	CE04W16V-47M(VR),Elect.
C822	394722217 or	CE04W6.3V220M(SC) or
	394622217	CE04W6.3V-220M(VR),Elect.
C832~C837	393341007	CE04W16V-10M(VX),Elect.
C841	373048224R2	ECHU16V-822J,Chip film
C849	373041534R2	ECHU16V-153J,Chip film
C852,C853	374721524	ECQ-B50V-152J,Plastic film
C854	393341007	CE04W16V-10M(VX),Elect.
C855	393344707	CE04W16V-47M(VX),Elect.
C856~C860	393341007	CE04W16V-10M(VX),Elect.
C863	393341007	CE04W16V-10M(VX),Elect.
C9501~C9503	374721044	ECQ-B50V-104J,Plastic film
C9505	394762227 or	CE04W35V2200M(SC) or
	394662227	CE04W35V-2200M(VR),Elect.
C9506	394764717 or	CE04W35V470M(SC) or
	394664717	CE04W35V-470M(VR),Elect.
C9507	394762217 or	CE04W35V220M(SC) or
	394662217	CE04W35V-220M(VR),Elect.
C9508	394744727 or	CE04W16V4700M(SC) or
	394644727	CE04W16V-4700M(VR),Elect.
C9510	394672217	CE04W63V-220M(VR),Elect.
	Resistors	
R6402	442521004	RS1/2WBJ-10,Metal oxide
R6403	442523304	RS1/2WBJ-33,Metal oxide
R6407	452630334	RNU1WCJ-3.3,Metal
R6410	453530224	RNU1/2WCJ-2.2,Metal
R9506	443522204	RS1/2WBJ-22,Metal oxide
	Terminals	
P301,P304	25045571 or	NPJ-6PDRW386 or
	25045300	NPJ-6PDBL159
P305	25045697	NPJ-6PWRLGGP493
P351	25045720	NPJ-1PDP510
	Sockets	
P101	25052211 or	NSCT-15P2108 or
	25052024	NSCT-15P1811
P306	2009990825UL	NSAS-26P1207
P7502B	25052576R2	NSCT-10P2473
	Plugs	
P261A	25055133	NPLG-3P117

P410B	25055707		NPLG-11P663
P411B	25055706		NPLG-10P662
P412B	25055704		NPLG-8P660
P801	25055711		NPLG-15P667
	Heat sink		
Q6402B	27160526		RAD-183
	Screws		
Q6402A,Q6405A	82143010		3P+10FN(BC),Pan head
Q6406A	82143010		3P+10FN(BC),Pan head

Driver circuit PC board (NAAF-7830-1D)

CIRCUIT NO.	**PART NO.**		**DESCRIPTION**
	Transistors		
Q5000~Q5005	2215896,	*	KTC3200-BL,
Q5010~Q5015	2210755,	*	2SC1775A-E,
	2210756 or	*	2SC1775A-F or
	2211733	*	2SC1845-E
Q5030~Q5035	2215844,		KTA1024-Y,
	2211353,		2SA949-O,
	2211354 or		2SA949-Y or
	2215843		KTA1024-O
Q5040~Q5045	2215854,		KTC3206-Y,
	2211633,		2SC2229-O,
	2211634 or		2SC2229-Y or
	2215853		KTC3206-O
Q5050~Q5055	2215896,		KTC3200-BL,
	2210755,		2SC1775A-E,
	2210756,		2SC1775A-F,
	2211732,		2SC1845-F,
	2211733 or		2SC1845-E or
	2215895		KTC3200-GR <HTR>
	Diodes		
D5000~D5005	224470562		MTZJ5.6B
	Capacitors		
C5000~C5005	374721015		ECQ-B50V-101K,Plastic film
C5010~C5015	393342207		CE04W16V-22M(VX),Elect.
C5020~C5025	394681007		CE04W50V-10M(VR),Elect.
C5040,C5041	393342217		CE04W16V-220M(VX),Elect.
C5042~C5045	393341017		CE04W16V-100M(VX),Elect.<htr>
C5050~C5055	394684707		CE04W50V-47M(VR),Elect.
C5100~C5105	394691007		CE04W100V-10M(VR),Elect.<htr>
C5110~C5115	394691007		CE04W100V-10M(VR),Elect. <HTR>
	Resistors		
R5160~R5165	415471214		R25J-120,NF carbon
R5170~R5175	415471214		R25J-120,NF carbon
R5180~R5185	415471004		R25J-10,NF carbon
R5190~R5195	415471004		R25J-10,NF carbon
	Sockets		
P6000A~P6005A	25052288		NSCT-5P2185
P6011A	25052293		NSCT-10P2190
	Plug		
P306A	25055376		NPLG-12P359
	Bus bar		

P5001	27141867	BBL40

Component video PC board (NAVD-7831-1D)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistor	
Q241	2215864, 2212115, 2213284 or 2213285	KTC3199-GR, 2SC2458-GR, 2SC1740S-R or 2SC1740S-S
	Diode	
D241	223163 or 223205	1SS133 or 1SS270A
	Relays	
RL241,RL242	25065610	NRL-2P1A-DC4.5-156
	Terminal	
P241	25045731	NPJ-9PDGLR519
	Sockets	
P242A	25052216	NSCT-20P2113
P243B	25051526	NSCT-4P1313

Constant voltage circuit PC board (NAETC-7833-1D)

CIRCUIT NO.	PART NO.	DESCRIPTION
	IC	
Q6931	222780565JRC	78M56(NJM78M56FA)
	Diodes	
D6932,D6933	22380260 or 22380035	RL1N4003 or GP104003E
	Capacitors	
C6931	394651027 or 394751027S	CE04W25V-1000M(VR) or CE04W25V1000M(SC),Elect.
C6933	394641007 or 394741007	CE04W16V-10M(VR) or CE04W16V10M(SC),Elect.
	Resistor	
R6935	441721214	RS2WBJ-120,Metal oxide
	Sockets	
JL9501A	25051111	NSCT-7P898
P410A	25051236	NSCT-11P1026
P411A	25051235	NSCT-10P1025
P6931A	25051527	NSCT-16P1314
P7503B	25052241, 25051312, 25051852 or 25052054	NSCT-8P2138, NSCT-8P1101, NSCT-8P1639 or NSCT-8P1841

Secondary circuit PC board (NAPS-7834-1D)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistors	
R9501	453530104	RNU1/2WCJ-1,Metal
R9502	453534794	RNU1/2WCJ-0.47,Metal
R9503	453532294	RNU1/2WCJ-0.22,Metal
R9521	453530334	RNU1/2WCJ-3.3,Metal <HTR>
	Socket	
JL9501B	25051111	NSCT-7P898

Speaker terminal PC board ass'y (NAETC-7835-1D)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D6600,D6601	223163,	1SS133,
D6604	223205 or	1SS270A or
	223222	WG713A
	Capacitors	
C6600,C6604	374721034	ECQ-B50V-103J,Plastic film
	Relays	
RL6600,RL6601	25065563,	NRL-2P5A-DC24-129,
RL6603,RL6604	25065517 or	NRL-2P5A-DC24-098 or
	25065586	NRL-2P5A-DC24-142
	Terminals	
P6800	25060347	NTM-4PDMN278 <htr>
P6801	25060317	NTM-4PDML248
P6802	25060348	NTM-8PDMN279 <HTR>
	Sockets	
JL6803B~JL6805I	25050270	NSCT-6P98

Connector PC board (NAETC-7838-1D)

CIRCUIT NO.	PART NO.	DESCRIPTION
P206A	25055711	NPLG-15P667,Plug
P243A	25055804	NPLG-4P760,Plug
P801B	25051240	NSCT-15P1030,Socket

Power amplifier PC board (NAAF-7842-1H)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q6010~Q6015	2213284 or	2SC1740S-R or
	2213285	2SC1740S-S
Q6020~Q6025	2213284 or	2SC1740S-R or
	2213285	2SC1740S-S
Q6030~Q6035	2203434 or	KTD2061-Y or
	2203010	2SC5171
Q6040~Q6045	2203424 or	KTB1369-Y or
	2203000	2SA1930
Q6070~Q6075	2214984 or	2SC2631-R or
	2214985	2SC2631-S <htr>
Q6303	2215995,	KTA1267-GR,
	2213354 or	2SA933S-R or
	2213355	2SA933S-S
Q6601~Q6603	2215864,	KTC3199-GR,
	2212115,	2SC2458-GR,
	2213284 or	2SC1740S-R or
	2213285	2SC1740S-S
Q6701,Q6702	2215896,	KTC3200-BL,
	2210755,	2SC1775A-E,
	2210756,	2SC1775A-F,
	2211732,	2SC1845-F,
	2211733 or	2SC1845-E or
	2215895	KTC3200-GR
Q6703	2215885,	KTA1268-GR,

	2211792,	2SA992-F,
	2211793 or	2SA992-E or
	2215886	KTA1268-BL
Q6901	2215864,	KTC3199-GR,
	2212115,	2SC2458-GR,
	2213284 or	2SC1740S-R or
	2213285	2SC1740S-S
Q921	2215864,	KTC3199-GR,
	2212115,	2SC2458-GR,
	2213284 or	2SC1740S-R or
	2213285	2SC1740S-S
	Diodes	
D6000~D6005	223163,	1SS133,
D6010~D6015	223205 or	1SS270A or
D6306,D6307	223222	WG713A
D6701,D6702	223163,	1SS133,
D6906	223205 or	1SS270A or
	223222	WG713A
D6703,D6704	224470512	MTZJ5.1B
D6903,D6904	22380130,	D5SBA20,
	22380038 or	RBV602 or
	22380274	RS603M-B42
	Capacitors	
C6040~C6045	394684707	CE04W50V-47M(VR),Elect.
C6050~C6055	374722234	ECQ-B50V-223J,Plastic film
C6230~C6235	374724734	ECQ-V50V-473J,Plastic film
C6701	394622217 or	CE04W6.3V-220M(VR) or
	394722217	CE04W6.3V220M(SC),Elect. <HTR>
C6704	394680107 or	CE04W50V-1M(VR) or
	394780107	CE04W50V1.0M(SC),Elect.
C6706	394621017 or	CE04W6.3V-100M(VR) or
	394721017	CE04W6.3V100M(SC),Elect.
C6708	374722234	ECQ-B50V-223J,Plastic film
C6901,C6902	3504384	CE69W71V10000M,Elect. <HTR>
C6903	374721044	ECQ-B50V-104J,Plastic film
C6904,C6905	374733344	ECQ-V100-334J,Plastic film <HTR>
C6906,C6907	374721044	ECQ-B50V-104J,Plastic film
	Resistors	
R6040~R6045	5210258	N06HR1KBC,Trimming
R6070~R6075	415471114	R25J-110,NF carbon <HTR>
R6080~R6085	415470224	R25J-2.2,NF carbon
R6090~R6095	415470224	R25J-2.2,NF carbon
R6100~R6105	4800071,	RSS2WK-0.22,
	4000131 or	RGC22-0.22 OHMK or
	4500027	MPC708-2WK-0.22,Metal plate
R6230~R6235	453630824	RNU1WCJ-8.2,Metal
R6604,R6605	453530824	RNU1/2WCJ-8.2,Metal
R6850,R6851	443523914	RS1/2WBJ-390,Metal oxide
	Relays	
RL6901,RL6902	25065561,	NRL-1P5A-DC12-127,
	25065508,	NRL-1P10A-DC12-093,
	25065515 or	NRL-1P5A-DC12-096 or
	25065526	NRL-1P5A-DC12-102

	Fuse holders		
F6901A,F6901B	25052133		NSCT-1P2031
F6902A,F6902B	25052133		NSCT-1P2031
	Sockets		
JL6402A	25051087		NSCT-3P874
JL6803A,JL6804A	25051110		NSCT-6P897
JL6805A	25051108		NSCT-4P895
JL6951A,JL6952A	25051109		NSCT-5P896
	Plugs		
P6000~P6005	25056010		NPLG-5P0960
P6011	25056015		NPLG-10P0965
P6080~P6085	25055038		NPLG-2P29
P6301	25055042		NPLG-3P32
P6931	25055805		NPLG-16P761
P931	25055701		NPLG-5P657
	Bar		
C6901A	27141817		(BUS)

Primary circuit PC board (NAPS-7845-1H)

CIRCUIT NO.	PART NO.		DESCRIPTION
	Power transformer		
T902	2301381	!	NPT-1358D
	Diodes		
D921~D924	22380260 or		RL1N4003 or
	22380035		GP104003E
D925	223163,		1SS133,
	223205 or		1SS270A or
	223222		WG713A
	Capacitors		
C901	3500196	!	RE275V-103M,IS
C922	394662217		CE04W35V-220M(VR),Elect.
	Resistors		
R901	4000206 or	!	RD1/2SPH-3.3M or
	431533355	!	RC1/2GFKUL-3.3M, Solid
R924	443528204		RS1/2WBJ-82,Metal oxide
	Relay		
RL901	25065561,	!	NRL-1P5A-DC12-127,
	25065508,	!	NRL-1P10A-DC12-093,
	25065515 or	!	NRL-1P5A-DC12-096 or
	25065526	!	NRL-1P5A-DC12-102
	Fuse holders		
F901A,F901B	25052133		NSCT-1P2031
	Sockets		
P902	25051571	!	NSCT-2P1358 <htr>
P931A	25051230		NSCT-5P1020
	Plug		
P901A	25055675 or	!	NPLG-2P631 or
	25056028	!	NPLG-2P0978
	Label		
F901C	29360842		Fuse

Secondary terminal PC board (NAPS-7846-1H)

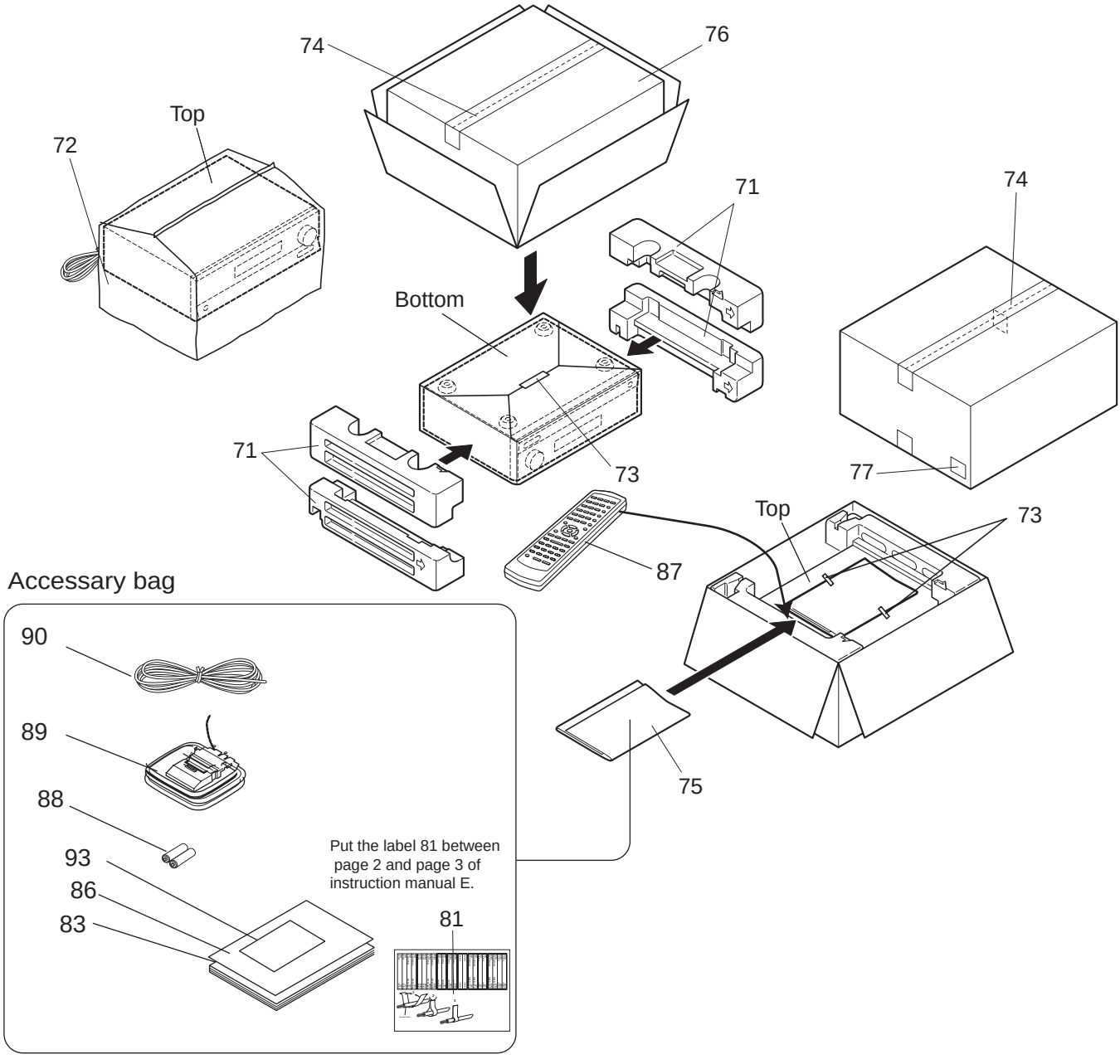
CIRCUIT NO.	PART NO.	DESCRIPTION

JL6951B,JL6952B	25051109	NSCT-5P896,Wire holder

Video circuit PC board (NAVD-7847-1H)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q203	22241759	LA7956
Q212,Q213	22241759	LA7956
Q281	222740046R2	74HCU04F
	Photo couplers	
U281,U282	24120101	TORX179L
	Transistors	
Q201,Q202	2213631 or	RN1241-A or
Q207,Q208	2213632	RN1241-B
Q204,Q209	2215995 or	KTA1267-GR or
	2213354	2SA933S-R
Q205,Q206	2215770 or	KRA102M or
	2213510	DTA114ES
Q210,Q211	2213631 or	RN1241-A or
	2213632	RN1241-B
	Coils	
L281,L282	233454K220 or	NCH-1452 220K or
	233526K220	NCH-1561 220K
L283	233454M022 or	NCH-1452 022M or
	233526K022	NCH-1561 022K
	Capacitors	
C201,C202	394680227 or	CE04W50V-2.2M(VR) or
C204,C207	394780227	CE04W50V2.2M(SC),Elect.
C203,C205	394644717 or	CE04W16V-470M(VR) or
C211,C215	394744717	CE04W16V470M(SC),Elect.
C209,C213	394680227 or	CE04W50V-2.2M(VR) or
C217,C218	394780227	CE04W50V2.2M(SC),Elect.
C221,C223	394644707 or	CE04W16V-47M(VR) or
C225	394744707	CE04W16V47M(SC),Elect.
C285	394624707 or	CE04W6.3V-47M(VR) or
	394624707	CE04W6.3V-47M(VR),Elect.
	Terminals	
P201	25045729	NPJ-10PDBY517
P202	25045727	NPJ-15PDBY515
P281	25045473	NPJ-1PDBL291
P282	25045696	LGY2502-0200C
	Socket	
P206B	25051240	NSCT-15P1030
	Plug	
P253A	25055236	NPLG-5P220

Thermal detector PC board (NAETC-7849-1H)

CIRCUIT NO.	PART NO.	DESCRIPTION
R6380	4000153	PTH9M04BF222TS2F333,Thermistor
JL6402B	25051087	NSCT-3P874,Socket

PACKING PROCEDURES